

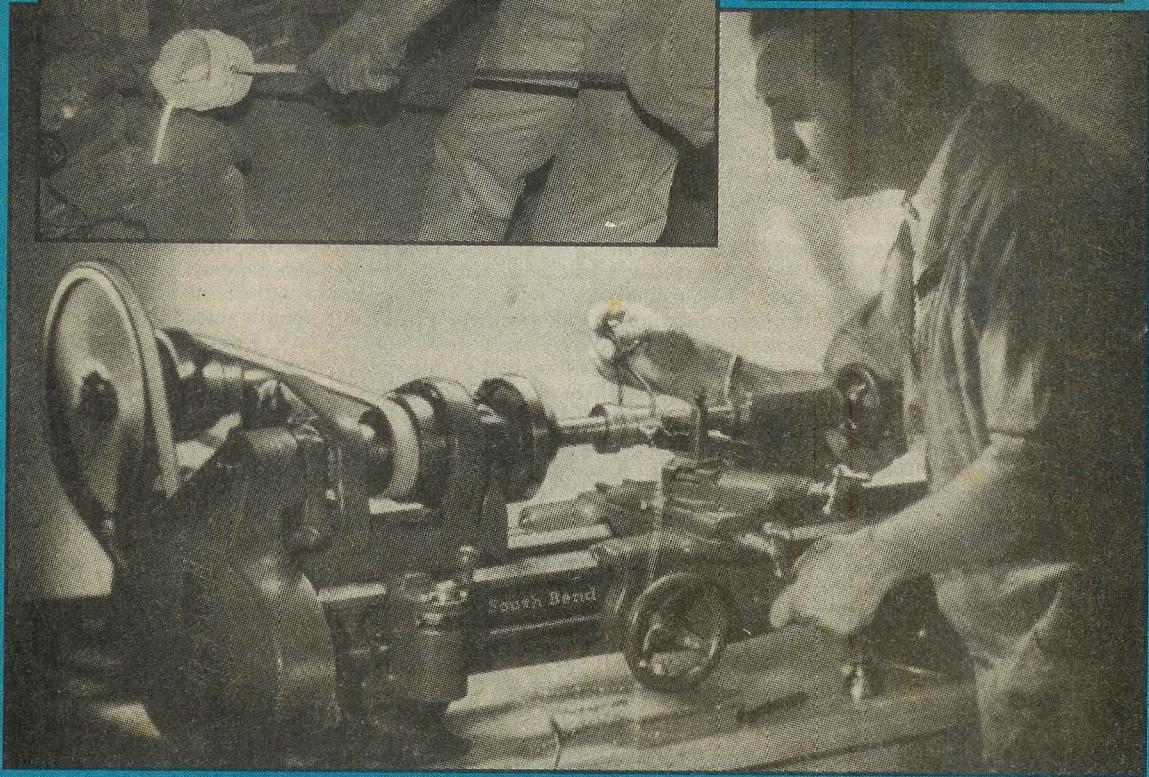
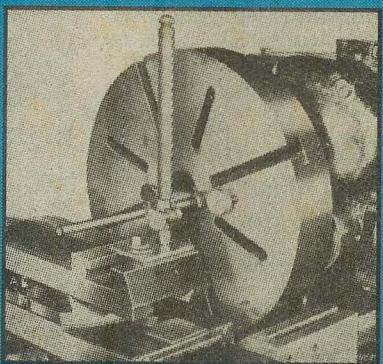
Catalog 108
Winter 1999
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Lindsay's

METAL

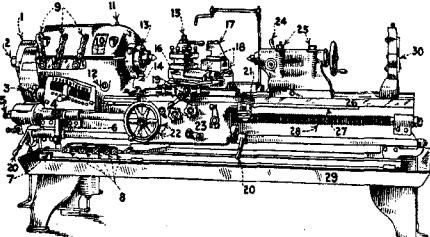
Working Books

Unusual metalworking books of exceptionally high quality revealing skills and processes almost forgotten.



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Running an Engine Lathe

by Fred H. Colvin
reprinted by Lindsay Publications

If you're just starting out using a metal cutting lathe, or you're trying to learn techniques you feel you should have known all along, then grab this. This small, but jam-packed book will show you all the basic techniques of running a lathe.

Thirteen chapters cover the engine lathe, centering lathe work, driving the work, tools and turning, steady and follower rests, faceplate work, chucks and chucking, boring tools, taper turning, cutting screwthreads, test indicators and their use, three types of centering mandrels and care of the lathe.

"Practical suggestions which will give the young machinist or apprentice the foundation principles of engine lathe work."

You'll learn all about essential operations in easy-to-read and understand text illustrated with simple, clear drawings. You'll learn about different kinds of dogs (not the barking type), split collars, toolholder and bits, work with shoulders, boring

the end of a bar, home-made follower rest, saving a poor casting, bridle for faceplate work, slotted chucks for flat work, precision drilling, boring cylinders, ways of figuring tapers, rapid thread cutting, cutting a double or triple thread, cutting Brown & Sharpe worm threads, using dial indicators, and much, much more.

There are many tables describing tapers, V threads, square threads, ACME threads, grinding angles on many different tools, and more.

The author was an old man when he authored this in 1941. He was editor emeritus of American Machinist magazine, and was the Colvin of Colvin & Stanley fame that turned out American Machinist handbook and countless texts. The man was an expert machinist.

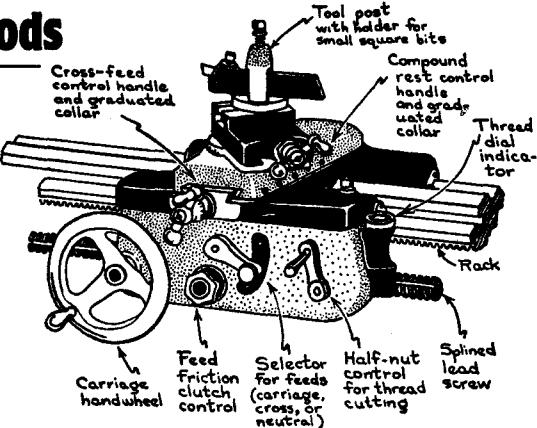
Here's a great little book at a great little price that you can't afford not to have, especially if you consider yourself a beginner on a lathe. Excellent book! Bargain price. 5 1/2 X 8 1/2 softcover 117 pages No. 4708 \$6.95

Machine Shop Methods

by Lorus J. Milne
reprinted by Lindsay Publications

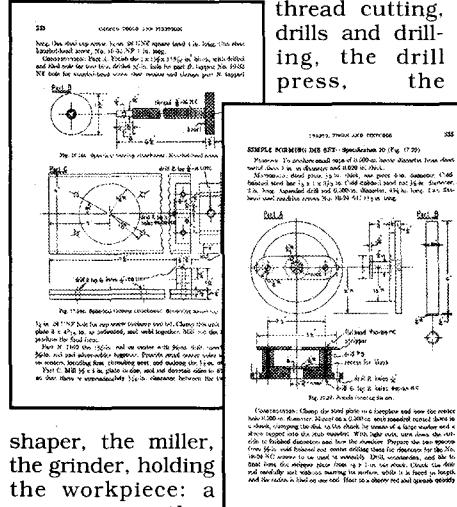
If you're just starting out in the world of metal working, you have to have this. If you know some aspects of machining metal, but realize that there are big holes in your knowledge, then, again, this is for you. When Dave Gingery first showed me his copy he commented that he thought this was the best beginner's book he had ever seen. And I agree. It's good.

Chapters include shop machinery, drawings and specifications, handwork related to machining, the lathe, turning work between centers, work supported chiefly by the headstock, outside machining, inside machining, threads and thread cutting, drills and drilling, the drill press,



texts. When you do, you'll find the "heavier" books are easier to understand.

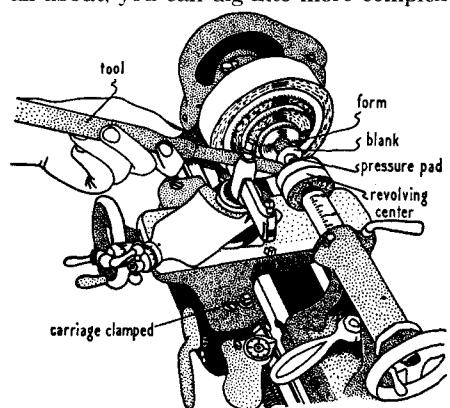
What's really grabbed my eye in this volume is chapter 17 with its complete dimensioned plans for tools and fixtures. You can build a cleaner for chuck threads, faceplate clamp, faceplate angle bracket, draw-in collet attachment, spindle-nose cap, collet closer, collet, micrometer carriage stop, external-internal threading tool, heavy-duty boring bar, heavy-duty



shaper, the miller, the grinder, holding the workpiece: a summary, other shop machines, useful tools and fixtures, gears and gear cutting, cutting speeds and finish, accuracy in machining assembling machined parts, processing and finishing metal, materials, and more.

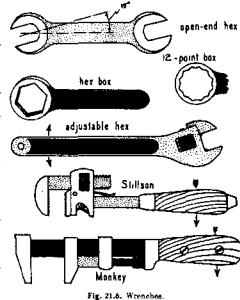
You get brief descriptions of tools and how they work. I've never used a taper attachment for the lathe, but now I have a general idea how it functions. The explanation is clearly written, easy to read and understand, and provides sufficient detail. It sounds a lot like Dave Gingery teachings.

Most of this you will read once or twice. Once you have an idea of what the topic is all about, you can dig into more-complex



boring-tool holder, centering indicator, dividing fixture, lathe boring table, cross-feed chuck and collet holder, spherical turning attachment, cutaway tailstock center, drill-countersink holder, tailstock die holder, tailstock stover attachment, taper-shank drill driver, perforating die set, simple forming die set, drill-angle tester, fly cutter for the drill press, and auxiliary table for the drill press. Now think of it this way: When you buy the book, you get each plan for less than a dollar a piece, and the rest of the book is thrown in for free! But the rest of the book is great, too. Both plans and a book for the price of just one. Not a bad deal, I'd say.

A book certainly worth having. A must-have adjunct to the Gingery series of metal shop books. A book that has been an essential part of the Gingery library. Get your own copy! 5 1/2 x 8 1/2 softcover 376 pages No. 22237 \$18.95



Machine Tool Adjustment

articles from *Machinery Magazine*
reprinted by Lindsay Publications

Another collection of short but sweet articles from post-WWI era issues of *Machinery* magazine on machine tools and their testing and adjustment.

First you get an interesting article on new Drummond lathes. You are not only told what the design features are that makes them unique, but you get the logic behind the size and shape of the saddle, tailstock, and gibs to maximum strength and rigidity. You get some valuable ideas in lathe design. Then come photographs of the variety of tests being performed on the lathe before it can leave the factory.

Next from July 1919 is a fascinating article that told British machinists how they could take their lathes that had almost been worn out from turning WWI artillery shells twenty four hours a day and restore them to factory accuracy and get years more life from them.

Here you will learn how to make test measurements, and how to calculate how much metal should scraped from what portion of the headstock and saddle to swing the spindle around into alignment, or lower it to make the tailstock line up, or whatever else might be needed. You get sample calculations

and incredible nuts-and-bolts tips on restoring a lathe to accuracy. This one article is worth the price of the whole booklet. Amazing how-to.

Then you get a lengthy two part article on lathe bearings. Now this is not about ball or roller bearings. This is about older bronze, brass and even steel bushings and sleeves. These simple but precise bearings ran on a film of oil sandwiched between the bush and the spindle. Very simple devices, but incredible performance was possible. The Gingery lathe uses bronze bearings, and you may have an old lathe which uses them.

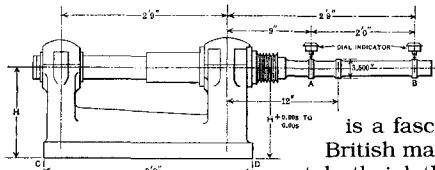
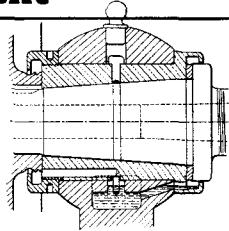
You get dozens of drawings of various types of bearings used in lathe headstocks, milling machines, grinders, etc and why they were designed the way they were. You get valuable tips on why one type of bearing was better than another. They can deliver years of precise work so long as they are lubricated and adjusted properly.

Finally a short article takes you to the Pratt & Whitney factory to see lathe lead screws being tested.

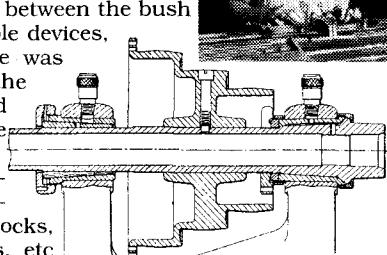
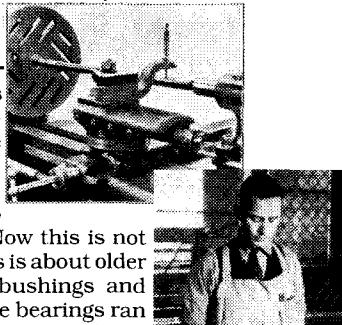
These are great articles. If you plan to build a lathe, or restore one, then you certainly will need this information. Even if you never use the info presented here, you'll learn a great deal about practical machine tool design. Great reading! Lot's of fun for the machinery nut. Get one! 5 1/2 x 8 1/2 booklet 47 pages

No. 22180

\$5.95



is a fascinating article that told British machinists how they could take their lathes that had almost been worn out from turning WWI artillery shells twenty four hours a day and restore them to factory accuracy and get years more life from them.



You get dozens of drawings of various types of bearings used in lathe headstocks, milling machines, grinders, etc and why they were designed the way they were. You get valuable tips on why one type of bearing was better than another. They can deliver years of precise work so long as they are lubricated and adjusted properly.

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These are great articles. If you plan to build a lathe, or restore one, then you certainly will need this information. Even if you never use the info presented here, you'll learn a great deal about practical machine tool design. Great reading! Lot's of fun for the machinery nut. Get one! 5 1/2 x 8 1/2 booklet 47 pages

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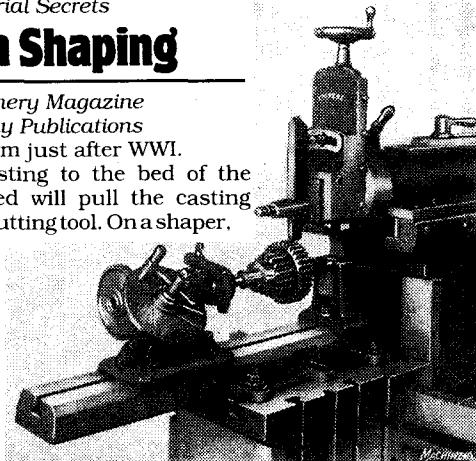
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Production Shaping

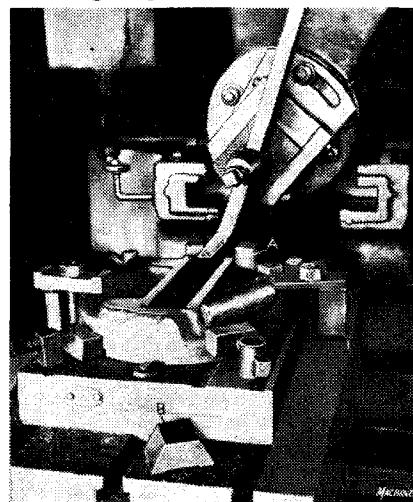
articles from *Machinery Magazine*
reprinted by Lindsay Publications

More articles from just after WWI.

You strap a casting to the bed of the planer, and the bed will pull the casting under a stationary cutting tool. On a shaper, however, the casting is stationary and the ram moves the tool across the casting to remove metal in ways a lathe can't.



You don't see shapers much any more, but that doesn't mean they're not useful. Here, you'll be taken into factories in England, Canada and the U.S. to see how shapers were put to work building other machine tools. It's about as close as you'll come to seeing shapers in action.



of shaper tables used by different manufacturers to counteract the downward thrust of the cut.

And you'll see a shaper adapted to cut radii, do surface grinding, and even cut teeth in a repaired gear.

Admittedly, some of the shapers shown and the work they're doing is larger than we'll encounter. But the principles of adjusting, clamping, and cutting are applicable.

These articles were written for the factory machinist who was to be doing this work. Just by "listening in" on the conversation, you're sure to learn valuable lessons. And the number one lesson: don't ever underestimate the value of a shaper. (Truth is, I think after you read this, you'll be drooling to buy a used shaper or build Dave Gingery's model.)

Great ideas. Valuable lessons. Inexpensive. Heavily illustrated. Get a copy. 5 1/2 x 8 1/2 booklet 48 pages

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\$6.95

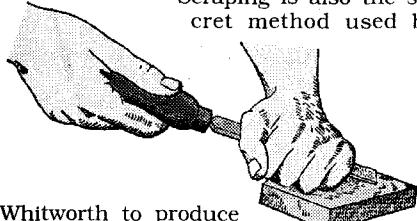
Old Time Mechanics

reprinted by Lindsay Publications

Back in the 1700's when you opened a machine shop, you didn't run out and buy a lathe and planer, you built them! Scraping was the skill necessary to produce absolutely flat and true beds and tightly fitting bearings. It was a skill that every mechanic learned, yet today few people have even heard of it.

Scraping is used on the machines described in the Gingery series of books.

Scraping is also the secret method used by



Whitworth to produce large surface plates accurate to millionths of inch two centuries ago! It is a very valuable skill. The first half of this booklet deals with the surface plate and scraping.

Secrets of Hand Scraping!

Also reprinted are instructions for lapping, grinding valves and joints, making shrink fits and force fits, and for balancing pulleys, cutter-heads, and emery-wheels.

Get a copy! Learn about these old-time skills. This information is fast becoming lost technology. 5 1/2 x 8 1/2 booklet 15 pages

No. 855

\$3.00

Lathe & Planer Tools

Machinery Reference Series 7

reprinted by Lindsay Publications

Learn about "Cutting Tools for Planer and Lathe" — the basic information about grinding and setting tools that every machinist should know.

"Boring Tools" will show you some of the methods in use in 1908 that just might solve a shop problem that you'll encounter soon.

"Shape of Standard Shop Tools" discusses just that — the best shapes for the particular job. Numerous illustrations will reveal shapes, the desired rake, length of shank and how these details affect the tool performance.

Finally, explore an unusual section on "Straight and Circular Forming Tools". Learn how to calculate dimensions and build the tools. Great information — a mixture of basic and unusual info low price. Order a copy. 5 1/2 x 8 1/2 softcover 40 pages.

No. 893

\$3.95

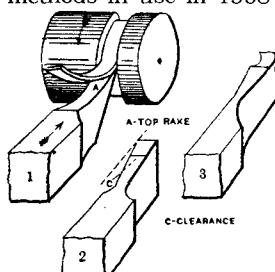


Fig. 16. Action and Form of Cutting-Off Tool.

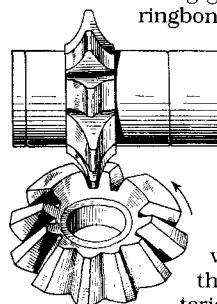
5 1/2 x 8 1/2 softcover 186 pages

Gear Cutting Practice

by Colvin & Stanley

reprinted by Lindsay Publications

Chapters include gear cutting practice, spur gears and circular cutters, shaping method of cutting gears, helical and herringbone gears, hobs and cutters, bevel gears, worms and worm gears, internal gears, heat treatment, burnishing, shaving, lapping and grinding gear teeth and more!



This book was written for industry so there will be a lot of material you can't use. Better to too much info than not enough. You'll get an education in gear geometry, the best alloy compositions to use for gears (in 1937),

specs on keyways, using the dividing head, comparison of hobbing

versus milling gear teeth, commercial hobbing machines available, vertical shapers designed for cutting gears, details on hobs, their use

and sharpening and on and on.

You get charts, tables, nomographs, photographs, drawings, and more. It's heavily illustrated. You're sure to learn something.

Get a copy! 5 1/2 x 8 1/2 paperback 344 pages

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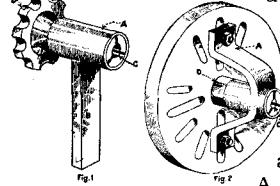
Cost-Cutting Shop Kinks 1927

by American Machinist Magazine

reprinted by Lindsay Publications

A collection of short articles from Am Machinist showing how to hundreds of useful jigs, fixtures and tools like a quick

acting universal chuck, how to plane a taper hole, parting tool attachment, a sensitive tap holder, and much more.

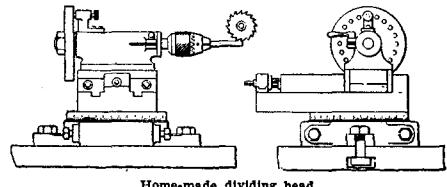


A lot of useful ideas, and some junk. Well illustrated.

5 1/2 x 8 1/2 softcover 186 pages

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\$9.95



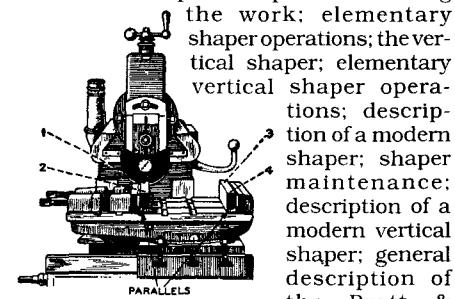
Shapers

by Emanuele Stieri

reprinted by Lindsay Publications

No doubt, Stieri produced this in 1943 to train machinists in the shortest possible time for war production.

Contents include classification and construction of shapers; shaper tools; holding the work; elementary shaper operations; the vertical shaper; elementary vertical shaper operations;



Whitney shaper drive to the machine; and safety rules.

This little handbook (we've enlarged it from its original size) is quick and dirty. In chapter four, for instance, the sections are titled: testing the work seat; testing solid jaw for squareness; setting vise parallel with direction of stroke; selecting the proper tool; taking a horizontal cut; adjusting the work; adjustment of stroke; and on and on.

This not only tells you how to run a shaper, it does it quickly and clearly. You get a how-to book that is easy-to-read. If you have a shaper, get a copy of this. Or if you intend to build Gingery's shaper, this a must-have companion book. Excellent. Get a copy. 4 3/4 x 7 softcover 180 pages

No. 21460

\$8.95

Mighty Metal Miter

by Don Meador

With this

simple jig you can make accurate square and angle cuts in metal from 20 feet long down to inches in length.

The author writes:

"The cost of this book and the cost of the parts will be recovered the first day the Mighty Metal Miter is used. I've seen simple square cutting metal chop boxes for \$170. But, the Mighty Metal Miter can make compound cuts. I have not priced a metal cutting compound miter, but one that cuts only wood can be found for \$359. I don't know how anyone that works with metal can pass this one up."

Uses an abrasive cutoff blade on a common power saw. Straight forward booklet. Consider it carefully. 5 1/2 x 8 1/2 booklet 29 pages

No. 1459

\$6.95

How to Run a Metalworking Shaper and Drill Press

by South Bend Lathe
reprinted by Lindsay Publications

Here are two great how-to booklets originally published by South Bend Lathe. I know the shaper booklet disappeared years ago, and I assume drill press is no longer published. You get both booklets in one volume at one low price.

If you have "How to Run a Lathe" by South Bend, then you know what these two 24 page booklets are all about. You get wall-to-wall how-to and indoctrination. Neither is going to make you an expert machinist, but you will get loads of practical info that will get you going.

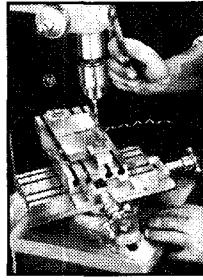
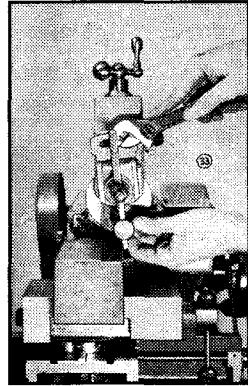
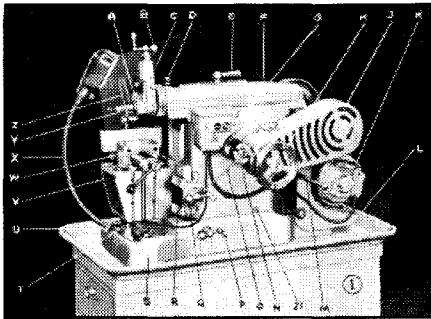
"How to Run a Metal Working Shaper" was copyrighted in 1952 and 54 back when South Bend still made shapers. You get sections on setting up, tools and holders, mounting the work, adjusting the shaper, operation, roughing cut, finish cut, vertical cut, bevel cut, and more. And it's wall-to-wall illustrations.

"How to Run a Drill Press" dates back to 1961 and was supplied with SB's 14" drill press. Is it still being made? You get introduction, specifications, unpacking, installation, mounting the motor, changing spindle speeds, replacing spindle, adjusting return spring, laying out work, grinding, countersinking, tapping, polishing, drilling in glass, buffing, drilling to depth, drilling deep holes, routing, mortising, and more.

This is great stuff. Applicable to all brands. Maybe it's time to collect and assemble a vintage SB machine shop from the 50's. Get a copy of this. Worth having. 5 1/2 x 8 1/2 softcover 56 pages

No. 22130

\$6.95



Shaper Operations

by J. W. Barritt
reprinted by Lindsay Publications

You get "job ticket" lessons published in 1937 for machine shop students. You get a list of the tools required, a break down of the major operations with detailed steps in each operation, followed by quiz questions to test your knowledge.

Fig. 3. Machining the top of Each job is accompanied by illustrations and "blue prints" to show you how the work is mounted and machined. When you're done with each of

Shaper Operations

is unbelievable. This book gives simple step-by-step instructions on "impossible jobs". I've never seen any of the operations described better. And most of it I've never seen attempted at all. Most of the machinists who knew how to run a shaper are dead. And even if they were alive few of them would be able to deliver such clean, no-nonsense instruction. If you have a shaper, you should have this book. And if you read this book, you will want to buy or build a shaper.

-DAVE GINGERY

these lessons, you should be very comfortable, if not expert, in running a shaper.

Get yourself a copy of this. Gingery's "How to Build a Shaper", "Advanced Machine Work", "Lathe and Planer Tools", and other books in this catalog and get to work. Not only is there lots to be learned, there is a lot of fun to be had! Order a copy and get started! 8 1/2 x 11 softcover 55 pages

No. 21036

\$7.95

Fig. 2. The gib is shown resting on parallels and held in the vise, and the rocking table set at the approximate angle.

Fig. 1. The gib is shown resting on parallels and held in the vise, and the rocking table set at the approximate angle.

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Eight
different
South Bend
booklets in
one volume!



STEP-BY-STEP LESSONS:

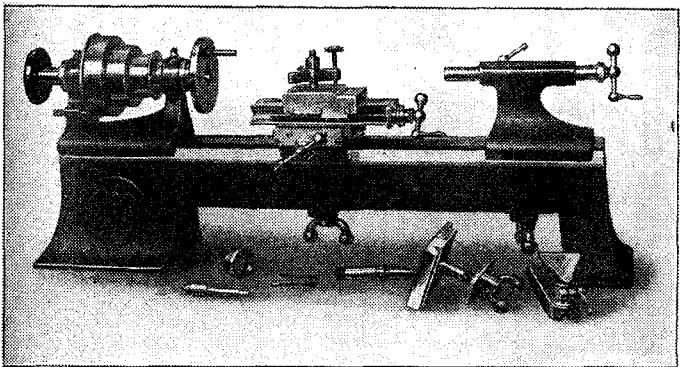
Machine plain surface on cast iron; Machine a plain surface on cast steel; Machine three surfaces with one setting; Machine a rectangular cast-iron block all over; Machine a cast-iron angle plate; Lay out and machine a cast-iron cylinder; Lay out and machine a tool steel V block; Machine a brass bracket; Cut a keyway in shaft; Cut a keyway in gear blank; Cut a deep slot; Machine a concave surface; Machine a concave surface of large radius; Machine a driver of machine steel; Cut a tool steel cam; Machine a cast-iron foot; Machine a steel wedge; Machine a taper gib; Machine a cast steel block; Cut a T slot; Cut a rack

Shop • How to True Brake Drums of Automobiles, Buses, and Trucks • How to Test and True Differentials • How to Bore Rebabbitted Connecting Rods • How to Make Bushings • How to Finish Pistons • How to Grind Lathe Cutter Bits • How to Cut Screw Threads in the Lathe

Obviously, South Bend was very much interested in promoting its products, and they knew the best way to do that was to show people how useful a lathe could be. These booklets are of exactly the same style of *How to Run a Lathe* being heavily illustrated with photographs and drawings. The section on cutting screw threads is, obviously, very similar to the chapter in the edition of *"Run a Lathe"* that we reprinted, but certainly not identical. The other booklets present new material.

Great stuff! Excellent illustrations. Fun reading. Useful how-to. This something worth having. Order a copy! 6x9 softcover 96 pages
No. 21583

\$7.95

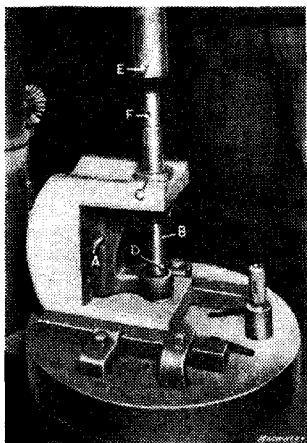


Machinery's Industrial Secrets

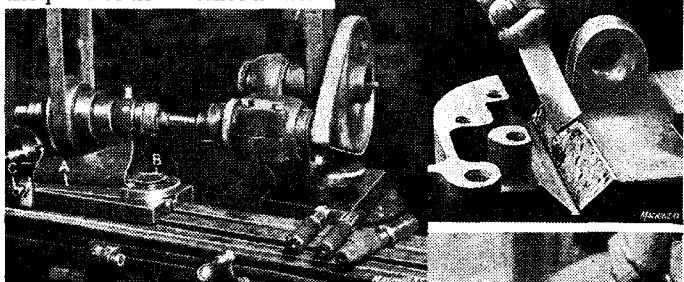
Bench Lathe Manufacture and Hand Scraping

reprinted by Lindsay Publications

In this series of articles reprinted from Machinery Magazine about 1921 you get details on how precision bench lathes were quickly and accurately built with ordinary rather than custom built machine tools. You'll walk through the Potter and TLM factories in England and see beds being milled, headstocks being bored and aligned, bearing cones being ground, dovetails being milled and much more.

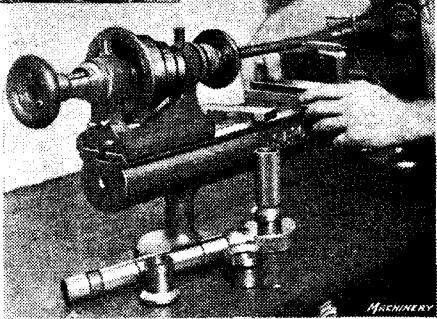


You also get a short but beautifully illustrated article on hand scraping, used not only for fit but for decorative effect as well. These eight pages are worth the price of the booklet alone.



If you build or rebuild machine tools, you're sure to learn something here that will help you. And even if you never use the material learned, you can be assured of fascinating reading. Get a copy! 5 1/2 x 8 1/2 booklet 48 pages

No. 22164 \$5.95



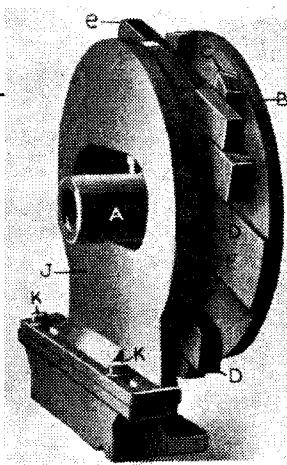
Machinery's Industrial Secrets

Lathe Notes Vol 1

articles for Machinery Magazine
reprinted by Lindsay Publications

More articles published after WWI.

First is an article on designing change gears. You get the simple calculations involved in designing change gear mechanisms for machine tools so that speeds will vary in geometrical progression. Examples include calculations for rotational speed of a lathe headstock with back gear, calculations for feed mechanisms for lathes and



studies how a complex lathe feed gear box was simplified to make it easier to manufacture without sacrificing end performance.

The largest article is

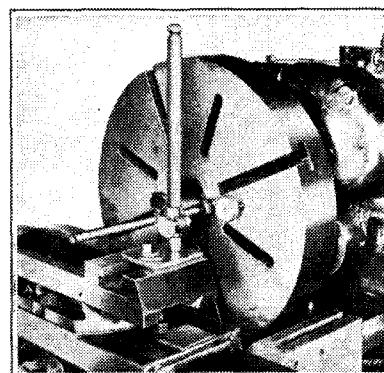
entitled "Checking Lathes for Accuracy". You'll learn how the pro's test beds for straightness and parallelism, inspect lead screws, check the headstock spindle, truing the face plate, and more.

And you get a short

article on a radius turning attachment, and three short articles on attachments and fixtures for elliptical turning and boring.

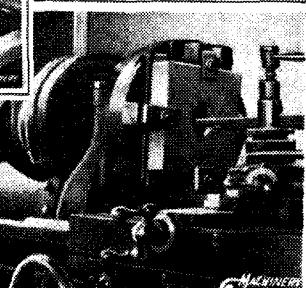
All articles are well ill-

lustrated. If you get one good idea from this booklet, you'll



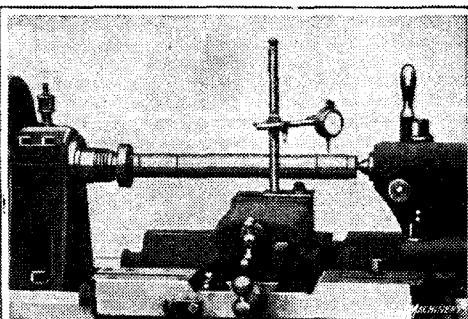
other machine tools, and calculations for a speed-changing mechanism for a horizontal boring machine. Great info for designers, restorers, and the mechanically curious (that's you isn't it?).

You get an interesting article on various types of gibs and gibbing, including info on a double-taper compensating gib. You get detailed discussion on the pro's and con's of each type of gib.



Another article reveals some unusual spinning chucks used for the production of coffee pots, kettles and the like. If you spin metal, you'll probably acquire a few useful ideas here.

Another interesting article



have gotten your money's worth. Take these proven solutions and push them to the next stage. Fun, useful reading. Get a copy. No. 22229 \$5.95

Lathe Operations 51 detailed projects!

by J. W. Barritt
reprinted by Lindsay Publications

Great workbook lessons for student machinists! You get a brief introduction to the lathe, cutting speeds and lubricants, cutting tools and their use, and then you get detailed step-by-step lessons.

You'll learn about grinding centers, aligning tailstock cen-

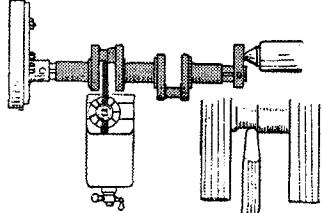


Fig. 3. This is also a slow tedious operation. Due to the long overhang of the tool, it is necessary to take light cuts and light feeds. When setting the tool, place it well above center line and with the end of the rule above the center line when setting the tool for the overhang. When turning very large shafts, it is customary to brace the end of the tool.

ter to a test bar, machining a steel pin, machining a steel shaft, machining a forged steel shaft, machining a forged steel rotor, machining a forged steel gear and spindle, machining a forged steel roll, machining a spotfacing bar (for Morse and Brown & Sharpe Tapers), and Machining a Tool Steel Lathe Center.

After a straight-to-the-point discussion of screw cutting, you'll learn the secrets of machining a forged steel body-bound bolt, machining a machine steel taper bolt, machining a tool steel screw, machining a machine steel worm, and more. When you're done with these lessons, you'll be able to cut a

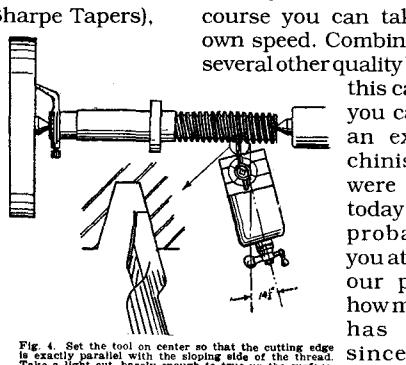


Fig. 4. Set the tool on center so that the cutting edge is exactly parallel with the sloping side of the thread. This is difficult to do, but it is well worth the trouble. It is well to use either cutting oil or cutting compound.

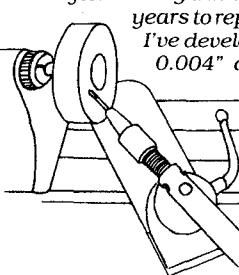
Get a copy of this. It's quality. You'll like it. Worth having. 8 1/2 x 11 softcover about 176 pages

No. 21109 \$13.95

How to Make Tiny Drills

by Robert Porter

"...After making this type of drill by hand the hard way for over 40 years to repair and restore antique clocks and watches, I've developed a simple method to make tiny (down to 0.004" diameter so far) drills quickly, easily and accurately."



You get a brief, nicely illustrated booklet that will show you how to make tiny spade drills from high speed steel and tungsten carbide. Here's the straight dope from someone who knows what he's talking about. Good stuff... 5 1/2 x 8 1/2 booklet 16 pages

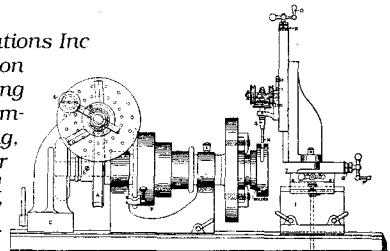
No. 1409 \$3.95

Modern Toolmaking Methods

by Franklin D Jones
reprinted by Lindsay Publications Inc

This is merely "a treatise on precision dividing and locating methods, lapping, making forming tools, accurate threading, bench lathe practice, tools for precision measurements and general toolmaking practice."

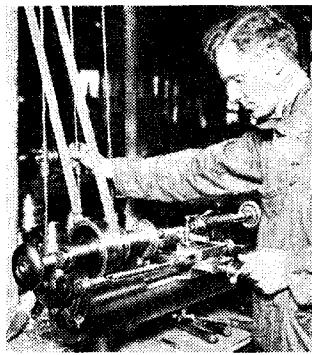
Actually this is another great collection of articles



Chapter three will teach you how to make and use forming tools for metal.

Then you learn to make accurate threading tools, grind threads on taps, test the lead of a thread, and solve problems with thread chasers.

Chapter six will show you how to make a precise straight-edge, surface plate, season cast iron and steel, flute angular

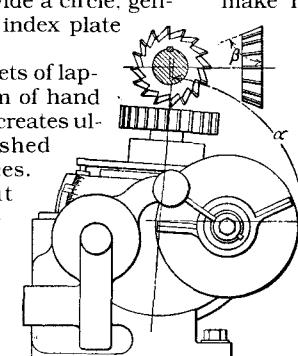


from Machinery magazine from 1915 and earlier. We first reprinted this book more than ten years ago but did not print more when we ran out. Now it's back.

Learn how to use buttons to precisely locate holes, use disks, accurately divide a circle, generate a large index plate and more.

Learn secrets of lapping — a form of hand grinding that creates ultra fine finished metal surfaces.

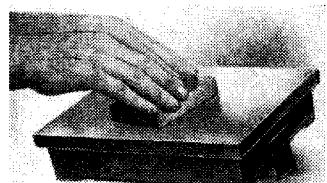
Learn about taps for internal and external work, a method of using a flat lap, chargin g laps, rotary diamond lap, and more.



cutters, sharpen end mills, make reamers and taps and much more.

Another chapter covers the use of a bench lathe for precise work while another chapter goes into micrometers, gages, sine-bars, depth gages and other precision measurement techniques.

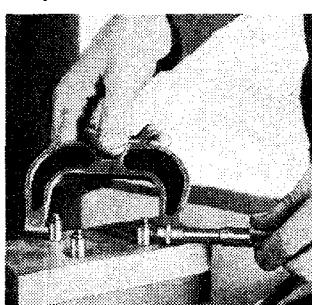
These are all short articles, straight-to-the-point, easy to read, and most are well illustrated. The photos are somewhat "muddy". The lousy

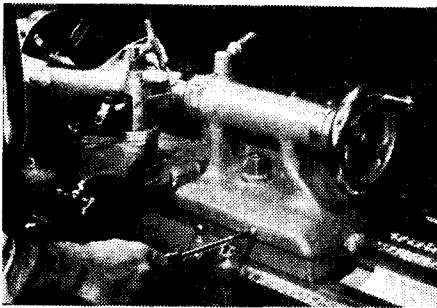


early photographs didn't reproduce as well as I would like, but they're acceptable.

Good book. Loaded with hints and tips. Plenty to learn. If you didn't get copy years ago, now's your chance. In another three of four years, it may be gone again. Get one while you can. 5 1/2 x 8 1/2 softcover 309 pages

No. 4724 \$12.95





Keep Your Lathe in Trim

by South Bend Lathe Works
reprinted by Lindsay Publications

From the Technical Service Department of South Bend Lathe Works. You'll learn how to "make all necessary adjustments, check power supply, protect lathe from abuse, and keep lathe in best operating condition."

This fifty year old booklet certainly won't tell you how to rebuild a lathe, but it WILL show you how to do the routine adjustments necessary to keep a lathe operating like new. Great little booklet. Get one.

5 1/2 x 8 1/2 booklet 28 pages

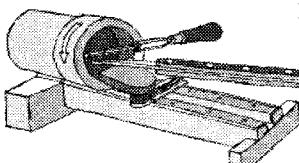
No. 21389

\$3.95

Turning Metal on a Simple Lathe

by John F. Maloy

Maloy first saw freehand turning performed by an expert blacksmith. Nineteen years since then, Maloy has used the technique to make steam engines, small airplane engines, and a muzzle loading barrel rifling machine. He has also managed to bore



a hole 44" deep free hand that was off center by only .010" at the opposite end!

Maloy will show you how to make a cutting tool, temper it with a propane torch, sharpen it, make the first pass, the second pass, finish it up, cut high carbon steel, make additional gravers. Illustrated but less well described are constructions of a bell chuck, turn a finned cylinder for a 3/4" pipe tee engine.

Surprising accuracy! Great reading.
5 1/2 x 8 1/2 booklet 24 pages.

No. 884 \$4.00

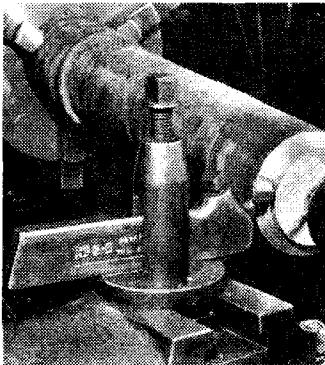
The Care and Operation of a Lathe

by Sheldon Machine Co, Inc
reprinted by Lindsay Publications

One of South Bend Lathe's competitors in 1942 was Sheldon Machine Co of Chicago. Sheldon saw the value of South Bend's "How to Run a Lathe" manual and apparently knew it had to publish its own. What resulted was a manual every bit as good as South Bend's, if not better.

Chapters include: the modern back geared screw cutting lathe, the basic parts of a lathe, the theory of metal cutting, grinding cutter bits for lathe tools, uncrating and setting up a lathe, oiling the lathe, setting up lathe tools, setting up the work on centers, turning, facing, knurling, thread cutting, drilling, boring, cutting off, and more. You get directions on mounting work in three and fourjaw chucks, drilling and countersinking centers, "Running-In" the lathe, discussions of the variety of tool holders, use of collets, toolpost grinders and much more!

You may not own a Sheldon lathe, but the small Sheldon lathe was a generic ma-



chine very much like those of South Bend and a dozen other manufacturers. You'll find it useful no matter what lathe you use.

Great book! Great illustrations! Great price! No lathe operator can afford NOT to have a copy of this. 5 1/2 x 8 1/2 softcover 112 pages No. 21052 \$7.50

Dave Gingery Comments:

My advice would be to read this book entirely before even turning the machine on. You really should not play with a lathe until you know what is in the pages of this book. Then use it as a training guide as you familiarize yourself with the machine. It will tell you how it's made and how it works, how to set it up, lubricate it and run it safely. Best of all it gives great instruction on tool grinding and every basic lathe operation. And it displays plenty of detail on accessories so that you can easily make many of your own if you can't justify buying them. It won't be long before you are an able machinist. I'm grateful that such a book is again available.

How to Run a Lathe 1942

by South Bend Lathe Works
reprinted by Lindsay Publications

South Bend Lathe still produces a modern edition of this book and will sell it to you at a much higher price than ours. We've reprinted this 1942 edition of "Run a Lathe" because copyrights on it have expired. It's new enough to be very similar to current edition, and yet old enough to be applicable to a lot of the older lathes still in use.

This is the lathe manual that Dave Gingery raves about. You get everything you need to set up a lathe and get it running.

You get eleven chapters: history and development of the lathe, setting up and leveling the lathe, operation of the lathe, lathe tools and their application, how to take accurate measure-



ments, plain turning (work between centers), chuck work, taper turning and boring, drilling reaming and tapping, cutting screw threads, and special classes of work. All the basics are here from sharpening drills to producing "superfinished" turned bearings, grinding valves, and turning multiple screw threads.

Remember, this is an introductory guide that was no doubt shipped with South Bend Lathes back then. Under no circumstances are you going to learn what is covered in "Advanced Machine Work". But this will get you going.

Remember! This isn't the current edition. But it's completely useful. Great book. Great illustrations. And a great price! You can't afford not to have one now. 5 1/2 x 8 1/2 softcover 128 pages No. 21150 \$7.95

Metalworking

by Paul N. Hasluck

reprinted by
Lindsay Publications Inc

Every metal worker must have a copy this. This is top rate. Full tilt. I've never seen anything quite like it. This 1907 American edition of "Metalworking" has 760 pages and 2,206 illustrations covering just about anything you would want to do to a chunk of metal.

This covers so much I don't know where to begin. Under "foundry" you'll learn about building Faraday's blast furnace, a gas injector furnace, a brick-built furnace, an oil furnace, crucibles, flasks, sands and on and on.

"Smiths' Work" is not about the farrier's trade, but about decorative iron work - making beautiful iron flowers, gates, plant stands, fireplace firedogs, brass fire screens, fireplace fenders, and a score of other Victorian blacksmithing projects. You get descriptions of the tools and anvil, of course, but you'll also find an interesting bending jig. The smithing chapter alone has 274 illustrations!

And on it goes: files, scrapers, buffing wheels, annealing furnaces, hardening and tempering equipment, drills, boring bars, and much more. You'll learn about the torches, bellows, furnaces, hearths for brazing and riveting.

The chapter on forging is more what we consider blacksmithing today: the basics of manipulating iron by heating and hammering.

The sheet metal chapter is a gem. With 177 illustrations you'll learn to make everything EXCEPT ventilation ducts. You make a small oil cook stove with oven, a deed case, a "coal vase" (decorative coal scuttle), a sizeable traveler's trunk, a drainer, a square copper tea

kettle, and much more. Incredible!

Once you've spent a life time learning all of this, you can begin repoussé: the decorative embossing of sheet metal. You can make decorative picture frames, lock plates, canopies for fireplaces, and more.

You get brass work, discussions of lathes and their tools and use (237 illustrations here alone!), metal spinning techniques and projects, tool construction, and on and on.

You'll be shown how to build the treadle-driven 4 1/2" lathe with a 4' 6" bed complete with headstock, tailstock and slide rest. This chapter could be a book in itself, and I don't know where you'll get the castings unless you make them yourself.

After you make some jewelry, you can make a simple eight day, 18" high skeleton clock. Its mechanism includes a pendulum and fusee.

The plans are not dimensioned and discussion is necessarily brief. But there is enough for a clock fanatic.

Fortunately there is much more detail when it comes to building the horizontal steam engine. With a 2" bore and 4 1/2" stroke at 50 psi, you should get 1/4 hp off the 16" flywheel. Great stuff!

The vertical steam engine can be built on a 3 1/2" backgeared lathe, and gener-

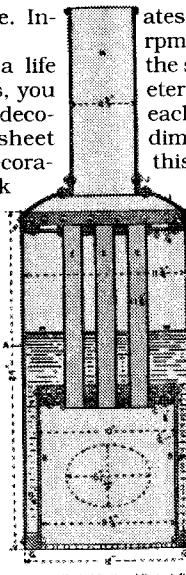


Fig. 186. - Vertical Section of Vertical Steam Engine.

ates 1/4 hp at 60 psi, 300 rpm and a cut-off at 5/8 of the stroke. The 1 1/2" diameter piston travels 2 1/4" on each stroke. You get loads of dimensioned drawings. And this is a governed engine, too.

Build three different boilers. You can build a model horizontal boiler 13" long and 7" in diameter. Or fabricate a small vertical boiler 24" tall and 12" in diameter that can generate 1/4 hp of steam. I don't want to be around when you decide to build the 8 hp boiler that stands 8' tall with 4' stack on top of that. This mother is 3 1/2' in diameter, is riveted, and looks like more than I would ever

want to tackle.

Build a gas engine with a 2 1/2" piston and 2 1/2" stroke. This 1 1/2 hp air-cooled engine weighs about 25 lb and is suggested for use on a bicycle.

Hasluck's Metalworking Tools, Materials, & Processes

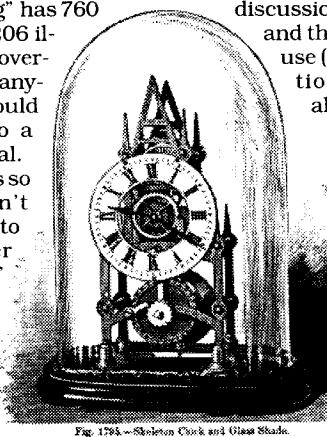


Fig. 1784. - Skeleton Clock and Glass Shade.

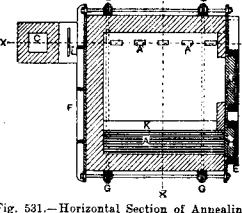
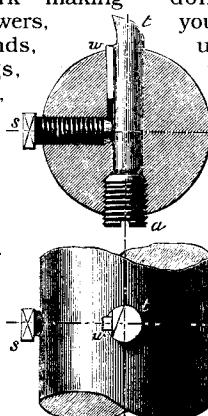
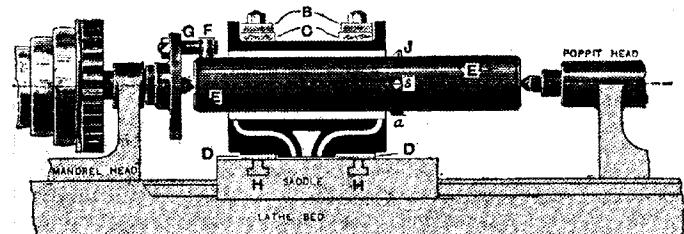


Fig. 531. - Horizontal Section of Annealing Furnace.

The 18" diameter water wheel will develop 1/4 hp at 30 psi and as much as 3/4 hp at 90 psi.

The dynamo/motor will generate or consume 50 watts of power.

You'll find talk about silver, copper, and gold plating and brass gilding in the electroplating chapter. The wire working chapter is incredible in that you will learn how to make fancy wire screening of different lattices that we, today, think can only be made by machine. After you make the electric bell, you can make a brass stand microscope, and a four-draw telescope with an erector for terrestrial viewing (a "must-have" for all would-be pirates...).



Dave Gingery writes:

Metalworking is nothing short of a dream-come-true for anyone beginning to put together a home shop...

I thought the Foundry Work section lacking in some details of practice and procedures. But the discussions of various types of furnaces makes up for any lack elsewhere. Wish I had seen this section when I was putting my foundry together years ago...

Naturally I appreciate the section on lathes and lathe work. And the chapter on building a lathe is by itself worth the price of the book. So also the details on tooling, attachments and accessories...

Every shop bird should order a copy of this one. And if he's dumb enough to lend books, he should order two or more copies because few people would return this one...

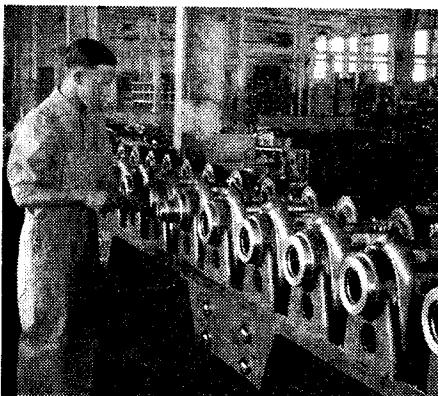
Again, anyone who works metal must have a copy of this. The ideas in here will fire you up. You'll really like this. Top

rate. I can't say enough about this one. Get a copy. 6x9 hardcover 760 pages 2,206 illustrations

No. 21265 \$29.95

Contents:

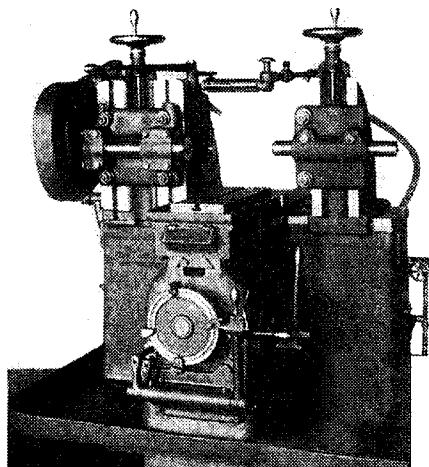
- foundry work • smiths' work
- surfacing metals • polishing metals: the machines and processes • annealing, hardening, and tempering • drilling and boring • taps, screwplates, and dies • soldering, brazing and riveting • forging iron and steel
- working sheet metal • repoussé work • oriental decorative brasswork • finishing, lacquering, and coloring brass
- lathes and lathe work • spinning metals on the lathe • tools for measuring and testing metalwork • building a 4 1/2 in. centre lathe • gilding and silver working • making a skeleton clock • building a small horizontal steam engine • making a 1/4-hp vertical steam engine • boiler making • building a petrol motor • making water motors • building a dynamo and electric motor • electroplating • wire working • electric bell making • making a microscope and telescope.



Accuracy for Seventy Years 1860-1930

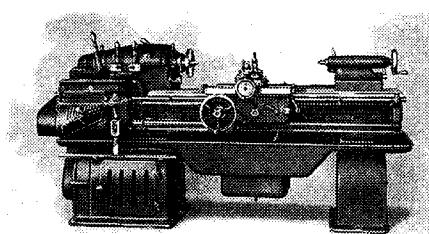
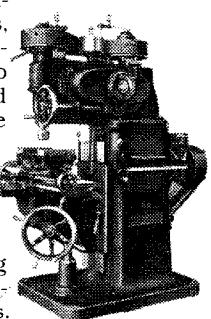
by Pratt & Whitney
reprinted by Lindsay Publications

Here you get a small, but heavily illustrated history of the Pratt & Whitney company on their 70th anniversary in 1930.



Not only are they congratulating themselves, but they're also advertising the company to outsiders. You'll find countless photos of the people who built the company, the buildings, machine shops, and their products from lathes and milling machines to typewriters and machine guns. Great fun! Get a copy. 5

1/2 x 8 1/2 softcover about 112 pages
No. 20870 \$9.95



Running a Milling Machine

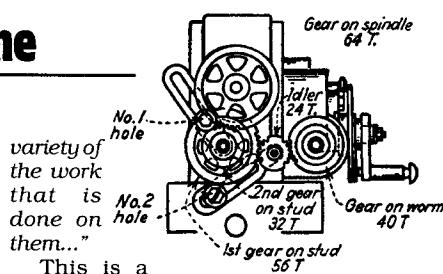
by Fred H. Colvin
reprinted by Lindsay Publications

Colvin, "Mr. Machine Shop", writes in the preface:

"Although this book is by no means a complete treatise on all the problems of milling machines and the large variety of work that is done on them, it makes clear the general construction of the different types of machine and gives a general idea of the kind of work they do. It shows how the different machines operate, points out the necessity of having

the work firmly clamped and the cutters sharp, and gives the foundation of the knowledge necessary to become a first-class milling-machine operator.

Beginning with the hand milling machine, which is the simplest machine of this type to learn how to operate, the book shows the other and more largely used kinds, gives the names of the principal parts, and shows a



This is a great companion to "Running an Engine Lathe" that was first published in 1941. Chapters include milling machines and their parts, examples of milling machine work, milling cutters, speeds and feeds of milling cutters, setting cutters for different kinds of work, milling vises and fixtures, the dividing head, a wide-range dividing head, and cutting helices sometimes called spirals.

Although most of the milling machines illustrated are horizontal machines just like the machine Dave Gingery will show you how to build, the material here is general enough to be useful on any milling machine - horizontal or vertical or even on milling attachments for lathes.

Well illustrated. Useful info. Worth having. Get a copy! 5 1/2 x 8 1/2 softcover 157 pages

No. 20986 \$7.50

Milling Machine Practice

by Cincinnati Milling Machine Co
reprinted by Lindsay Publications

No nonsense. Just straight talk about what you need to know to do quality milling.

And it was put out by Cincinnati in 1942. They oughta know what they're talking about.

Four chapters include analysis of the process of milling, milling cutters, use of milling cutters, and milling machines. Within these chapters are sections with titles like

characteristic form of the milling chip, cutter classification based on relief of teeth, material for milling cutters, feed rate, rake angle, cutting fluid, comparison of up-mill-

ing and down-milling, rotary and drum type milling machines, knee and column milling machines and much more.

You get a great low cost booklet loaded with tables, diagrams, photos and practical information on the process of milling. Admittedly this was aimed at industry (probably for building 16" guns and Sherman tanks) but has direct application to the smaller scale machining we do and want to do.

Look it over. The quality is there, and the price is certainly right. Get a copy. 6x9 booklet 48 pages

No. 21990 \$3.95

Milling Machine Kinks

by Colvin & Stanley

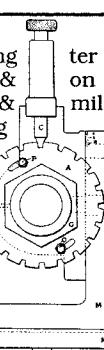
The "dynamic duo" were always writing something. No, no, no! NOT Batman & Robin, knucklehead! I mean Colvin & Stanley! Here's one for the 1908 milling machine operator.

You get articles reprinted from American Machinist magazine including milling machine feeds and speeds, how to mill a heart shaped cam, cutting racks on the milling machine, accuracy in jig and fixture work on the miller, indicators applied to milling machines, testing mill cut-

ter arbors, fixtures for cutting bevel gears on the miller, boring tool-holders for the milling machine, a fixture for milling taps, reamers, and more.

This is a small book loaded with practical information and excellent illustrations that was aimed squarely at the professional machinist. Useful. Loaded with ideas that could probably be adapted to many other problems. Get a copy. 4x6 softcover 99 pages

No. 1313 \$4.95



Let Dave Gingery

show you how to build a complete machine shop from scrap!

Dave has proven that you can start with simple handtools and can build precision machine tools. First, you set up a simple foundry and pour castings to build a lathe. You then use the lathe to build the shaper which will cut the dovetails, T-slots, and gears for the milling machine. Next, you build the drill press. Finally, you can go back and build the accessories you need for your lathe and other tools: dividing head, screw-cutting gears, chucks, and lots more. A handy sheet metal brake is thrown in for good measure.

As you build each machine, Dave teaches you new skills in foundry, mechanics, and machining. When you're done, you end up with a complete machine shop that you have built, you can use expertly, and you can repair should something go wrong. And best of all, you're a pretty darned good machinist.

I've never seen a series of books like this. Dave's books have become metal working classics, and Dave has become a cult hero. If you haven't seen his books, then you have really missed something. And it's time that you did something about it!

PACKAGE PRICE! "Build Your Own Metalworking Shop from Scrap"

ALL SEVEN GINGERY BOOKS:

Charcoal Foundry, Lathe, Shaper, Drill Press, Milling Machine, Deluxe Accessories and Sheet Metal Brake! Save \$6.70
No. 929 \$59.95

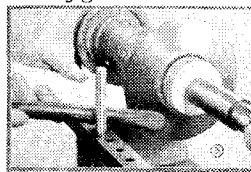
Getting the Most Out of Your Lathe

edited by Sam Brown
reprinted by Lindsay Publications

A Delta publication from the 1930's! The wood turning section covers the lathe and equipment, spindle turning, faceplate and chuck turning, special turning operations, jigs and fixtures, using lathe attachments, more!

The metal turning section covers equipment for metal work, operations in metal turning, miscellaneous

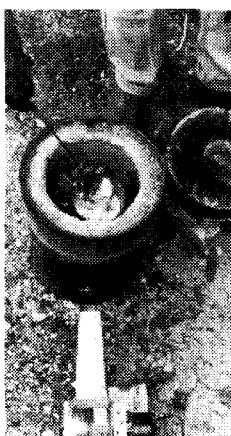
metal operations. Special section on turning delivers spinning equipment, methods of working, and special spinning chucks. Lots of ideas. Well illustrated. And low cost. Get one. 6x9 booklet 48 pages
No. 22008 \$5.95



1 - The Charcoal Foundry

by Dave Gingery

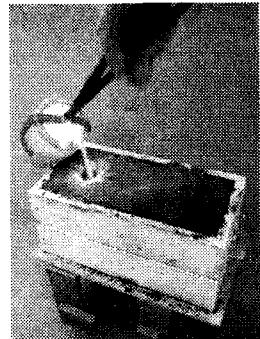
You can melt aluminum, pot metal, and even brass with a very simple home built furnace fueled with grocery store charcoal.



All you need is an old metal 5-gallon pail, about a few dollars worth of fireclay, some sand, a hair drier or vacuum cleaner and this book to build a high temperature furnace. One man built the furnace itself for about \$7. The blower, cords, a pipe for a crucible, and the rest cost a few dollars more, but I can't imagine that the whole set up being more than \$25 - probably less if you're a good alley picker.

After making a pattern, I rammed up a mold with sandbox sand and fired up the furnace. In went the crucible around which

I placed about 75¢ worth of charcoal briquettes. Into the crucible went an old electric iron, a couple of pistons and an old accordion (well... maybe not the accordion). After skimming off the dross, I poured the 1400 F metal into the sand mold. About 20



Dave Gingery shows you how to melt aluminum with charcoal!

minutes later, I had a face plate casting for a small lathe.

You'll need this simple furnace to make the castings you need for the machine tools you will build using Dave's other books. So get started. Simple. Inexpensive, but so powerful a tool! Highest recommendation! Tens of thousands sold! Top rate! Get a copy. 5 1/2 x 8 1/2 softcover 80 pages
No. 163 \$7.95

2 - The Metal Lathe

by Dave Gingery

Build a sturdy, precision metal cutting lathe for much less money than you'd pay for one of those "toy" lathes on the market. The only precision measuring equipment you need is a feeler gauge. You DON'T need any machine tools. In fact, Dave built the two prototypes for less than \$50 each just a few years ago!

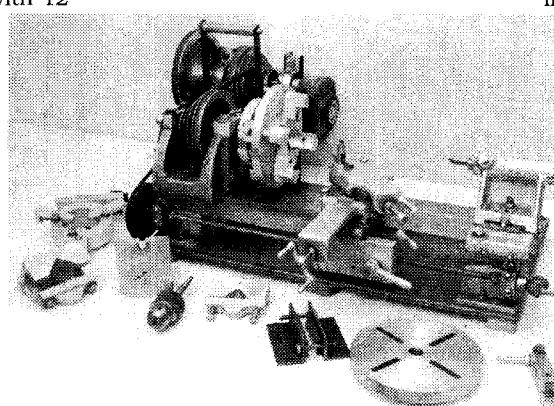
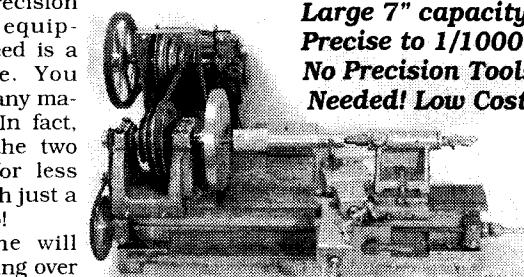
Your lathe will have a 7" swing over the bed, about 5" over the saddle, with 12" between centers. You can bore the headstock spindle and tailstock to No. 1 Morse taper if you wish. You can scale it up but you'll need larger castings than the charcoal foundry can provide.

I had a chance to use one of the prototypes. After a pass across an 8" long steel bar, my micrometer showed a taper of less than .001". Not bad for a \$50

homemade lathe!

Castings from your charcoal foundry are the secret of building a quality lathe.

Large 7" capacity! Precise to 1/1000" No Precision Tools Needed! Low Cost!



Build Dave Gingery's Engine Lathe!

do! Order a copy today! 5 1/2 x 8 1/2 softcover 128 pages heavily illustrated.
No. 177 \$9.95



3 - The Metal Shaper

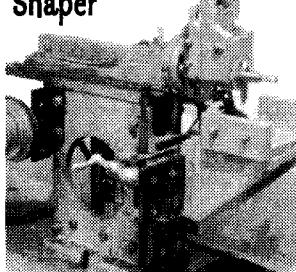
by Dave Gingery

You may have heard that shapers are obsolete. Say that to someone who owns one! I dare you!

Truth is, there is hardly a cheaper, quicker way to cut keyways, splines, gears, flat and angular surfaces, dovetail slides, irregular profiles and more. Most of this can be done on a milling machine, but often the milling machine must use an expensive cutter. A shaper, for instance, can use a 50¢ piece of tool steel to cut gears. Forget the expensive cutters.

You can build an excellent metal shaper with a 6" maximum stroke and a

Build Dave Gingery's Metal Shaper



mean capacity of 5" by 5".

The tool head rotates through 180 degrees for angular cuts, and features a graduated collar with a simple lock. The down feed has a graduated collar, and the exact stroke length can be set. Your shaper will have variable speed, automatic variable cross feed and adjustable stroke length. It will be a machine worth bragging about.

You get all the pattern plans, all the secrets, and all the details. You'll need the charcoal foundry and Gingery's metal lathe or its equivalent. Like Gingery's other books, this one is jam-packed how-to. Great book!

Order a copy of this classic!

5 1/2 x 8 1/2 softcover 144 pages, heavily illustrated. No. 187 \$9.95

4 - The Drill Press

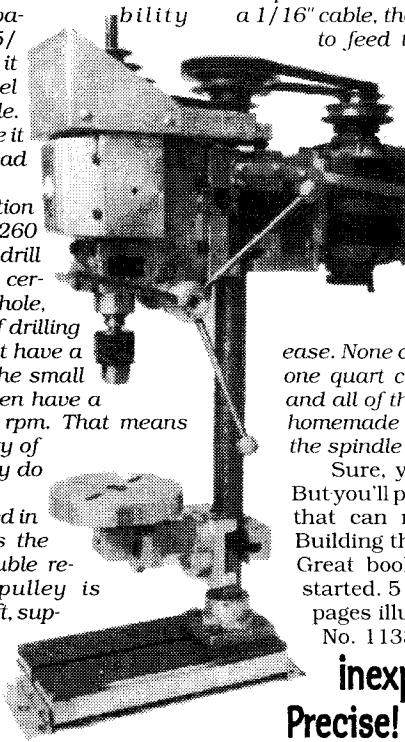
by Dave Gingery

Build a professional quality drill press! It's a beauty! Dave describes it:

"I can't believe the capacity of this machine. I put a 5/8" bit in the chuck, and it drilled through a 1/4" steel channel without a pilot hole. My wife said it looked like it was cutting cheese instead of steel."

Note the double reduction that gives a low speed of 260 rpm. That's why it can drill large holes in steel. I'm certain it can drill a 3/4" hole, and it may be capable of drilling up to a 1" in steel. I don't have a larger bit to test. All of the small drill presses that I've seen have a low speed around 700 rpm. That means they only have a capacity of 3/8" in steel, even if they do have 1/2" chuck.

The spindle is mounted in ball bearings, and so is the countershaft for the double reduction. The driven pulley is mounted on a hollow shaft, supported by its own 1" ball bearings to run concentric with the spindle. No belt tension is transferred to the spindle.



The quill feed is 2 1/2", and it can be made longer. The quill is advanced by a unique cable winch mechanism. This is only a 1/16" cable, though it had ample strength to feed the 5/8" bit to produce a closely curled chip. It has provisions to adjust tension and backlash, which is very important for sensitive drilling with small bits at high speed.

The machine in the manual is a 12". It can easily be scaled down about a third or smaller, and it can be scaled up to a hefty floor model with ease. None of the castings used the full one quart charcoal foundry capacity, and all of them were machined on the homemade lathe. Only the spline on the spindle was done on the miller."

Sure, you can buy a drill press. But you'll pay an arm and a leg for one that can match this performance. Building this one is worth the effort. Great book! Order a copy and get started. 5 1/2 x 8 1/2 softcover 128 pages illustrated

No. 1133 \$9.95

inexpensive! Powerful, Precise! And YOU build it!

5 - Milling Machine

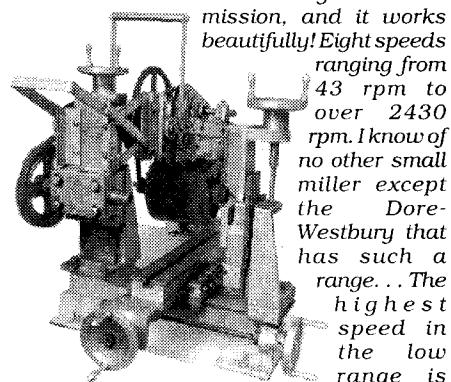
by Dave Gingery

Dave can tell the story best:

"It's a horizontal miller, but it has the full range of vertical mill capability when used with the angle plate on the work table. Home shops will find a horizontal mill and a shaper to be not so nearly obsolete as the 'experts' say, and even the smallest shop would soon outgrow one of those little toy vertical mills.

The work table 2 3/8" x 12" with a 3/8" T-slot, and it travels a full 12". The carriage travels 6 1/2" with the tail stand in use, and 8 1/2" with it cleared away.

It took over a month to design the transmission, and it works beautifully! Eight speeds



ranging from 43 rpm to over 2430 rpm. I know of no other small miller except the Dore-Westbury that has such a range... The highest speed in the low range is

270 rpm, and it made a .035" cut in the end of the compound with the face mill set at a 3" diameter at that speed with no squawk or chatter.

I made the cutter on the lathe, but the miller is designed to make its own cutters for nearly every purpose. This cutter adjusts from 2 1/2" to 4 1/2". It's an aluminum casting, and it was cast with a steel core to leave the slot for the cutter bit. It shows no sign of failure after planing off the end of the compound. The set screws didn't loosen, and the casting wasn't strained in the least amount. That's after several passes over a sandwich of 1/4" steel top and bottom, and an inch of aluminum between.

Anything is possible. It can make jigs or fixtures that are needed for any kind of work. It can make any type of style of cutter. You could even machine a blank or a Brown & Sharpe gear cutter, mill the lands, and grind the cutter right on the miller.

I'm really excited about this machine. It's much more than I thought possible when I began."

Build yourself a milling machine! Order a copy of this. It's worth twice the price. 5 1/2 x 8 1/2 softcover 160 pages

No. 1128 \$9.95



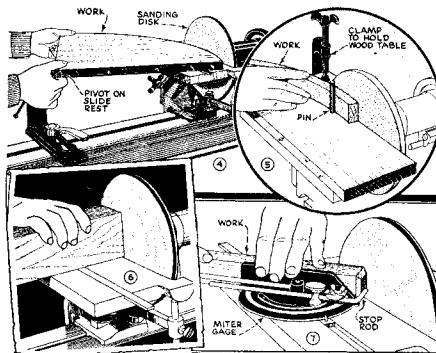
Getting the Most Out of Your Lathe

edited by Sam Brown
reprinted by Lindsay Publications

Another Delta publication from the 1930's! And it's great. If you have "Getting the Most Out of Your Scroll Saw" or "Abrasive Tools", you know exactly what this is about. Only it's lathes, lathes and more lathes. Wall-to-wall illustrations, practical how-to and easy-to-read text.

The wood turning section covers the lathe and equipment, spindle turning, face-plate and chuck turning, special turning operations, jigs and fixtures, using lathe attachments, and wood finishing.

The metal turning section covers equipment for metal work, operations in metal



The Photographs Above Show a Few of the Many Uses of Sanding Drums on the Lathe. The Drawings Picture Typical Operations Using the Adjustable Sanding Table in Connection with the Sanding Disk.

turning, miscellaneous metal operations.

And a section on turning deliverers spinning equipment, methods of working, and special spinning chucks.

If you're an experienced worker, you'll may find this a bit too simple. After all I suspect Delta enclosed this booklet which each new lathe they sold. It was intended for the beginner (which we all are to one degree or another).

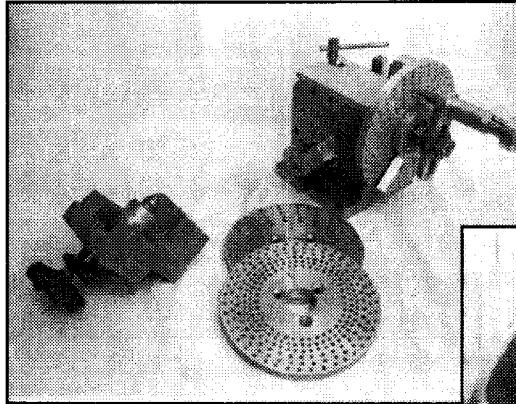
Fun reading. Lots of ideas. Well illustrated. And low cost. Get one. 6x9 booklet 48 pages No. 22008 \$5.95

6 - Dividing Head & Deluxe Accessories

by Dave Gingery

Now that you've built the lathe, shaper, milling machine, and the drill press at almost zero cost, it's time to build the fancy accessories.

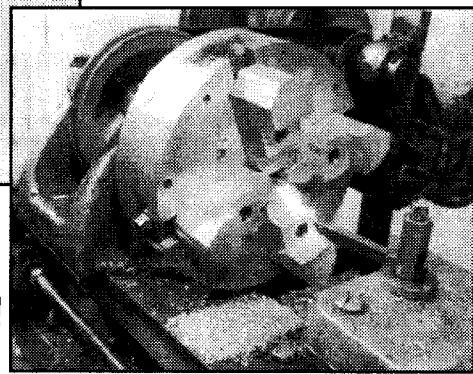
Build simple tools: compact clamp dog, heavy face plate, homemade hand reamers, a set screw chuck, expanding and threaded



Build an indexing Head, Face Plate, Steady Rest, Change Gears, Mandrels, Chucks, More!

Then, you'll build the dividing head that serves as a rotary table, too. This beauty is built around a standard 40 tooth worm gear, providing all divisions through 50 and all even and multiples of 5 through 100. Many other divisions up to 1960 are possible, and it's easy to make a special plate for an unusual job.

Next, you'll cut professional quality change gears to add screwcutting capability to your homemade lathe. Dave will show you how to make gear cutters for about 50¢ each! You'll get a conventional tumbler plate that provides left hand thread cutting, while the basic set of gears cuts all threads



mandrels for facing gear blanks and for cutting teeth, plus a simple fixture for tapping truly perpendicular holes by hand.

Build more complex tools: a simple two-jaw chuck that can be self-centering for repetitive work and a four-jaw chuck with independent reversible jaws, and a steady rest.

of standard inch sizes from 8 to 80 tpi. A fine feed range from .0025" per revolution to .005" is also provided. You even get a threading indicator for the carriage to simplify thread cutting on the lathe.

Incredible quality! Rare how-to! Order a copy today. 5 1/2 x 8 1/2 softcover 159 pages

No. 1153

\$9.95

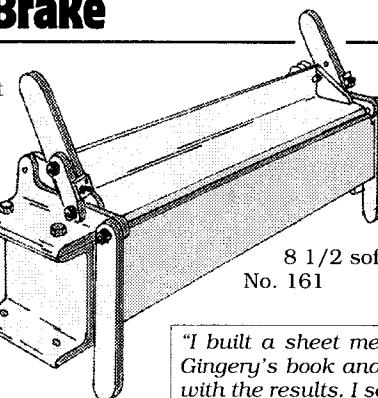
7 - Sheet Metal Brake

by Dave Gingery

Build a brake, and turn sheet metal into ducts, flashing for your house, boxes for tools and supplies — you name it. Dave told me he has built many brakes over the years some of which are still being used in industry.

You get far more than plans. Inside this 52 page paperback you'll find drawings, parts lists, how-to, dimensions and everything you need to know about building a brake. You'll find the plans scaled for an 18" wide machine, but you will also learn how people have been scaled it up to much greater widths. Dave will even show you how to use the brake to make common joints and bends. You'll need an arc welder to lay a few beads.

People have written to say "that's my kind of book." And they're right. Dave takes you by the hand and shows you construction step-by-step, pointing what is and is



not important in the design of the brake. You don't often see good plans for a brake, let alone good ones. So order a copy! 52 pages 5 1/2 x 8 1/2 softcover

No. 161

\$8.95

"I built a sheet metal brake using Dave Gingery's book and am extremely happy with the results. I scaled it up to twice the size and added truss bars and a modification to the bending leaf that allows me to form right-angle ribs. I have about \$100 in it and it is far superior to the \$300 'home shop' units I have seen. They have screw-down holders for the clamping leaf, but the toggle levers on Dave's machine make any job ten times easier & faster! Thanks a million for the great books that you publish."

-Bernie Kuschel

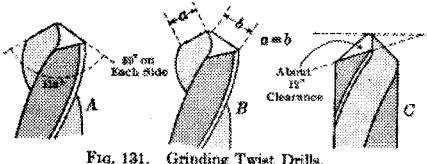


FIG. 131. Grinding Twist Drills.

Lathe Design, Construction and Operation

by Oscar Perrigo
reprinted by Lindsay Publications

We first reprinted this 1916 book over ten years ago, but discontinued it a few years back. We've now reissued it.

Chapters include history of the lathe up to the introduction of screw threads; the development of the lathe since the intro-

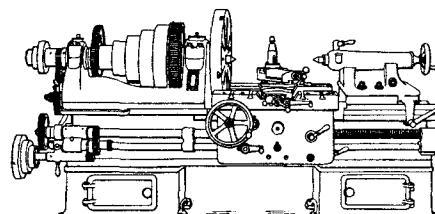


FIG. 241. — 24-inch Swing Engine Lathe built by the R. K. Le Blond Machine Tool Company.

duction of screw threads; classification of lathes; lathe design: the bed and its supports; lathe design: the headstock casting, the spindle and the spindle cone; lathe design: the spindle bearings, the back gears

and the triple gear mechanism; lathe design: the tail-stock, the carriage, the apron, etc; lathe design: turning rests, supporting rests, shaft straighteners, etc; lathe attachments;

rapid change gear mechanism; lathe tools, high-speed steel, speeds and feeds, power for cutting-tools, etc.; testing a lathe; lathe work; engine lathes; heavy lathes; high-speed lathes; special lathes; regular turret lathes; special turret lathes; electrically driven lathes; and practical instructions on lathe operation.

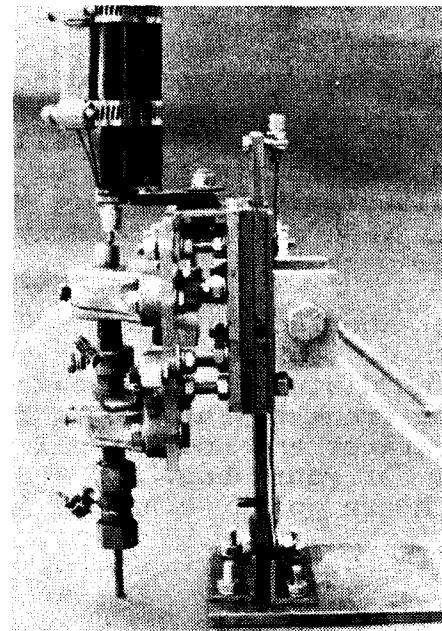
Covering the almost 500 pages are three hundred and forty-one engravings illustrating every-

thing from a modified parabolic lathe bed to a test piece for ascertaining if the headstock spindle is parallel with the V's. You'll see engravings of various (but far from all) lathes such as the 20 inch swing turret head chucking lathe built by F. E. Reed Company.

This is a great book for lathe fanatics and machinery nuts like you. Lots of pictures, lots of information on all kinds of lathes, and lots of ideas and useful info. It's a time machine and almost an encyclopedia. A bit expensive but useful and entertaining. Get a copy. You'll like it. 5 1/2 x 8 1/2 softcover 469 pages

No. 4180

\$24.95



Metal Disintegrator

by Ramah Machines

Essentially this is an vibrating engraver driving a commercially available electrode into the metal. An electric spark eats away the metal, leaving a clean hole. A great machine to remove broken taps. Ever try to drill one out? Good luck!

The disintegrator is built from commonly available materials. A lathe or milling machine is not required. You get details on assembly of the vibrating head, electrode selection, fabrication of water flow device, power supply, and much more. The prototype cost \$275.00 with new equipment, and that's a lot less than \$7000 for a commercial unit.

Again, if you don't need a disintegrator, the ideas and info here should be useful in investigating ECM concepts. Very unusual device. Small but excellent booklet. Worth its price. 8 1/2 x 11 booklet 34 pages with photos and drawings.

No. 1277

\$10.90

A Money Maker!

Mr. Lindsay:

I built Benjamin Fleming's metal disintegrator and use it often. I work as an automotive machinist and broken bolts are an occupational hazard. I still drill them out. (When you're good, you're good.) But those that clumsy mechanics have broken off - taps, drills and (the notorious) easy-outs - are no longer beyond salvage. I fire up the "tap burner" and before you can say "thanks, Mr. Fleming", it's out. I then get to say "that'll be \$25.00", which is half the going rate, and split the take with the boss. So far, this machine has paid for every book I have gotten from you and I hope to make it build a much bigger library...

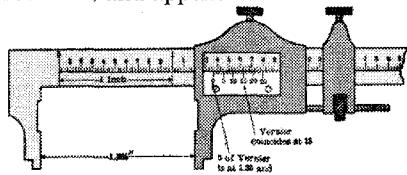
J. I., Fort Worth TX

Mathematics for Machinists

by R W Burnham
reprinted by Lindsay Publications

If you're not using math, just the simple stuff, on a regular basis, you're missing out one of the most powerful (and low cost) tools ever developed. It's very simple. Here, machinists learn only what they need.

Chapters include: common fractions; decimal fractions; percentage; blueprints; measurements; constructions; powers; square root, significant figures, right-angled triangle; lathe work; threads; thread cutting; planer, shaper, drill press; simple machines; work, power, ratio and proportion; gear ratios, pulleys, belting; gear calculations; milling machine; volume and weight; shop trigonometry; materials and processes; and appendix.



You get great illustrations, simple explanations, and straight-forward problems to work with answers. Learn to figure gears needed to cut a thread on the lathe. Learn to figure cutting speeds. Find the angle of a taper. Layout the largest possible square in a piece of round stock. Find the horsepower of a steam engine.

Again, this is very basic. If finding the circumference of a circle is a problem for you, get this. It will gently walk you through the most basic math you need. This is for the guy who feels completely lost in the world of math. If that's you, get a copy of this. This first appeared in 1915, was updated and reissued in 1943. A very high recommendation. 5x7 softcover 253 pages
No. 21680 \$11.95

from Drilling & Surfacing Practice

No. 21729 elsewhere in this catalog

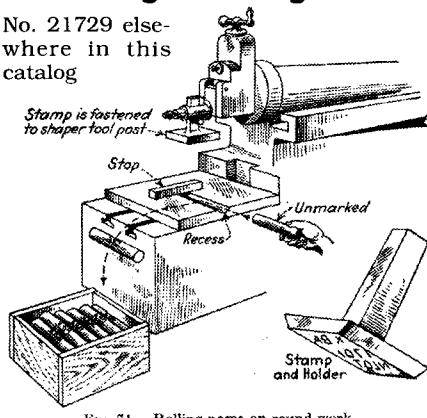
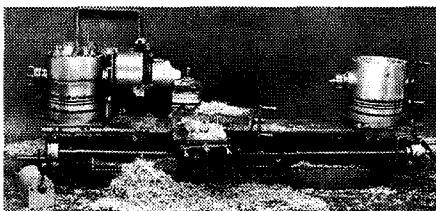


FIG. 71. — Rolling name on round work.

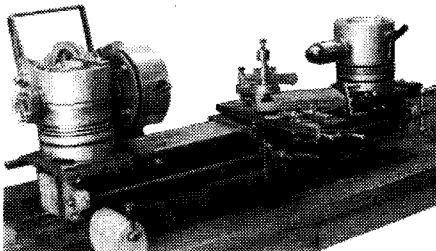


Metal Lathe

by Ben Fleming

You can build a precision lathe without castings that has almost a 10" swing over the three foot bed. And you can do it with little more than hand tools and a small drill press. A 3' bed provides about 22" between centers, but the bed can be extended several feet if you want. Four speeds are provided on the prototype. You get a compound rest, and a cross slide with about 4 1/2" of travel.

Ben writes in his manual, "No outside machining is required. The lathe is bolted together for all parts but three, which are brazed or welded together . . . The only 'precision' tool I used in the lathe construction was a good quality framing square. Using the construction methods as outlined in these plans, I was able to produce a lathe that, on its first test, showed only a .007 error, and with a few simple adjustments, can be brought close to a tolerance of .001."



Dave Gingery and Ben Fleming swapped ideas from the beginning. Dave comments, "His plan answers very well to the man who wants a larger lathe. Well thought out project, and within the ability of the average do-it-yourselfer, I think."

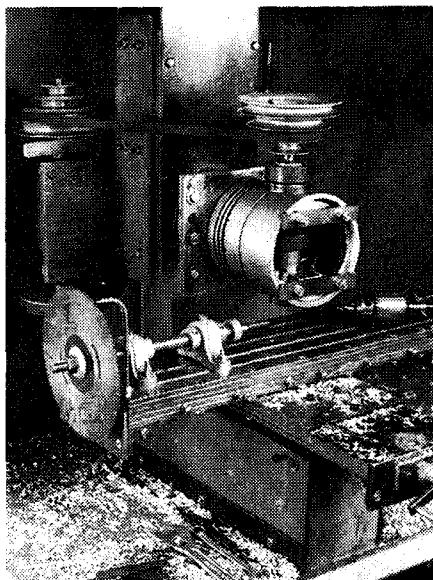
Cost of the prototype was \$185. One of Fleming's design tricks is the use of large truck pistons instead of castings.

You get a detailed 49 page construction manual. You'll get recommendations, step-by-step instructions, hints and tips, as well as addresses of suppliers for tools and any special parts that you might need.

There is no provision for power feed on the lead screw, and therefore, this is not a screwcutting lathe. But by the time you build a copy, you might have figured out an ingenious way to add it. Even so, this is a powerful, precision lathe that can turn out quality work for you.

Following the text are many photos and layout templates to make the construction fast and easy. A fine lathe. Consider building one. At the very least put this book in your library. 8 1/2 x 11 softcover 49 pages well illustrated

No. 1212 \$13.95



Vertical Milling Machine

by Ben Fleming

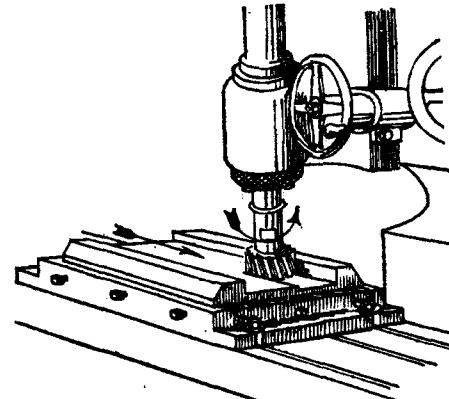
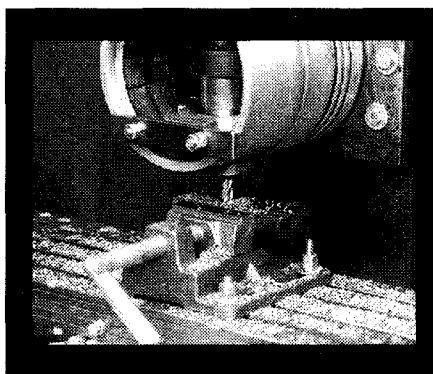
The proven construction techniques used in the "Nephite" lathe project have been used to build a powerful, precise vertical milling machine. The universal milling 6" wide 4" high table that you will build will provide 13" X travel and 6 1/4" Y travel. And the table will allow milling at angles. Tests show that the maximum thickness of material that can be milled is 6 to 7". Four spindle speeds are provided with an optional high-low range. Max depth of cut in mild steel with a 3/8" four flute end mill was .035". A 1/2" two flute mill in aluminum cut .220" deep. Max height of the machine is 37" and weighs in at about 260 pounds. It uses a

1/4 to 1/2 hp motor.

You'll need a lathe to machine the spindle, but other than that all you'll need is the usual drill press and hand held electric drill, plus the usual hand tools. No castings.

A lot of valuable information for a very low price. What would it cost to buy a mill? How many hours would you waste perfecting your own design? It's worth it. Order a copy today. 8 1/2 x 11 booklet about 85 pages.

No. 1209 \$13.95



Milling Machine Operations

by J. W. Barritt

reprinted by Lindsay Publications

You get valuable illustrated lessons that can make you an expert with a milling machine. You get an introduction to the milling machine, the care of arbors, mounting the work, feeds and speeds, clearance angles and other essential topics.

You get step-by-step instructions and drawings that will teach you how to cut off a brass packing piece, cut off a cold rolled steel plate, saw a Bakelite plate, machine a brass spacer, a cast-iron bearing key, and several cast iron brackets. You'll learn about the indexing head and its use. You'll learn how to cut a tang on a tool-steel spotfacing bar, mill a machine steel latch pin, mill a machine steel stud and a variety of shafts, machine a cast-iron gear, a brass shoe, a forged steel packing piece, a machine steel pull pin, a steel worm, and more.

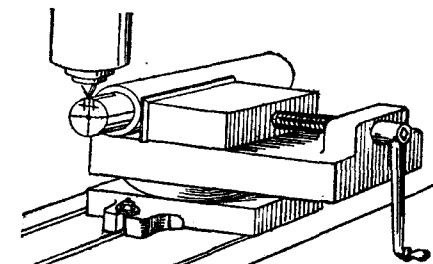


Fig. 2. This is one way of centering the work with the spindle. It is necessary that the keyway be cut on the center of the shaft.

Most of the lessons show set ups for the horizontal milling machine which is the traditional miller that Dave Gingery shows you how to build in his books. Towards the rear of the book are several lessons for the vertical milling machine. Regardless of the type of machine you have, the lessons are applicable.

Make your milling machine sit up and sing rather than make it chatter! Quality lessons! Loaded with illustrations. Order a copy today. 8 1/2 x 11 softcover 110 pages

No. 21141

\$9.95

Machine Shop Practice 2nd Ed

by Karl Moltrecht

This is the best-selling 1981 two-volume set from Industrial Press...

"Everything the apprentice or on-the-job professional needs to know about the intelligent and efficient operation of machine tools is here. Enhanced by over 760 illustrations and 70 tables. These new editions now offer sections on numerical control: grinding wheels (that includes the newest abrasive materials); single point cutting tools and tool wear; basic drilling machine setups; and formulas for estimating the power required for planing - all significantly expanded and updated. And, greater attention has been given to methods of setting up the workpiece on milling machines, horizontal

boring machines, planers, and shapers."

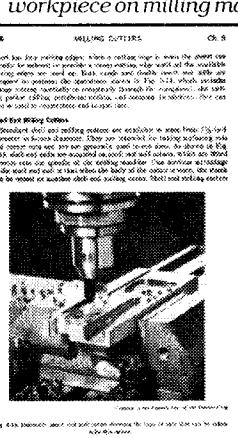
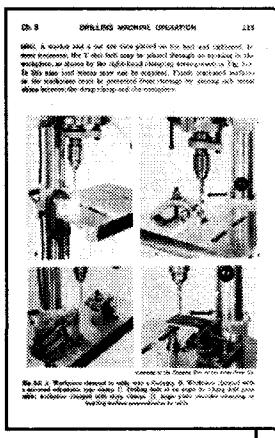
This is easy reading, heavily illustrated machine shop how-to. It's jam-packed with info, and is an incredible value. It's not as detailed as "Advanced Machine Work," nor is it low-cost like "How to Run a Lathe", but it's a whole reference library in two volumes. Sure, it covers machine shop just like many other books. But it's different and has its own slant to offer. I look at it as a supplement to, not a replacement for, such basic books as Henry Ford's Shop Theory.

Check it out. Definitely worth having. An enormous amount of information for relatively few dollars. 6x9 hardcover vol 1: 570 pp vol 2: 566 pp reg. \$41.90

No. 1450 special: \$39.95

CONTENTS

Basic Metal Cutting Operations; Basic Measuring Instruments; Layout Work; Drilling Machine, Twist Drills, and Auxiliary Tooling; Drilling Machine Operation; Engine Lathe Construction; Single-Point Cutting Tools and Their Performance; Turning on Lathe Centers; Chucking Work; Taper and Angle Turning; Faceplate Work; Screw Threads and Screw-Thread Measuring; Cutting Screw Threads on a Lathe; Turret Lathes, Production Lathes, and Vertical Lathes; Precision Hole Location; The Jig Borer; Metal Cutting Saws; Shaper Construction and Shaper Tools; Shaper Work; Planers and Planer Work; Milling Machine Construction; Milling Cutters; Milling Machine Operations; Indexing; Dividing Head Work; Helical and Cam Milling; The Horizontal Boring Machine; Grinding Wheels; Cylindrical Grinding; Surface Grinding; Cutter and Tool Grinding; Numerically Controlled Machine Tools; Surface Plate Inspection Methods



it low-cost like "How to Run a Lathe", but it's a whole reference library in two volumes. Sure, it covers machine shop just like many other books. But it's different and has its own slant to offer. I look at it as a supplement to, not a replacement for, such basic books as Henry Ford's Shop Theory.

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VIDEO!

Basic Lathe Operation

with Steve Chellis
produced by Bob Bailey

Let Steve Chellis show you the basics of lathe work in this surprisingly good video. Chellis has been a journeyman machinist for more than 40 years, and for the last 15 years has operated Chellis Machine and Tool. He has trained a number of apprentices. Through this video you can be his latest.

You'll start out by examining the tools you'll need to layout work and cut threads. You'll take a close look at threads, gauges, measuring wires, dial micrometers, center gauges, a surface plate, surface gauges, dial mikes, and more.

At the grinding wheel he'll show you how he cuts a lathe tool from a high-speed steel blank. Then you'll learn how to cut threads in the lathe, measuring as you go to ensure accurate, high quality work.

You'll watch Chellis mark out a steam engine eccentric which must be part of the 4" scale traction engine he is building. The eccentric is chucked in the lathe, the shoulders are turned down. After rechucking the eccentric, the casting is drilled and bored. You'll watch each step, and he'll talk to you, giving you hints and tips, as he makes the cuts.

You'll see a set up he devised to bore what looks to be the crosshead for his engine. The homemade boring bar was made from a 1 1/2" diameter hunk of cold rolled steel. You'll watch it zip through the casting.

Watch him cut threads on the engine steam chest after getting the casting accurately positioned in the four-jaw chuck. You'll find useful ways to use a dial micrometer and center-finding wiggler. And more!

This and a good lathe book from this catalog will get you going in the home shop. Consider this carefully. 61 minutes video VHS format (NTSC - will not play on PAL or SECAM systems)

No. 1350 \$32.95

Basic Milling Machine Operation

with Steve Chellis
produced by Bob Bailey

This video opens with a running Stirling engine rattling, but quickly shifts into milling machines, their tools and the necessary set ups to get precision results.

Steve will show you his tools including end mills, collets, drills, tap starters, edge finders, wiggler, a boring head, a home made fly cutter, a Jacobs chuck, carbide insert miller cutters, taps and lots more.

Then he'll take you over to his vertical mill and show you all the controls from vertical quill feeds to table controls. He'll briefly mention what to avoid if you intend to buy a used milling machine.

You'll square up a one inch thick aluminum plate. Steve will show you how to clamp it to the milling machine table and use a dial indicator to true it up. You'll see how useful homemade stop blocks can be in setting up the work. You'll drill a hole, and then bore it out without removing the plate from the table.

You'll use a rotary table, set the head an angle and true it up again. You'll learn how to use a sine plate to measure angles, use a vice on the table, square it up, use an indexing head and a rotary cutter to cut gears, and more.

Interesting tape. Great basic material. Videos aren't cheap, but consider how many expensive castings you could ruin before you learned some of the basic lessons taught here. VHS video about 1 hour

No. 1351 \$32.95

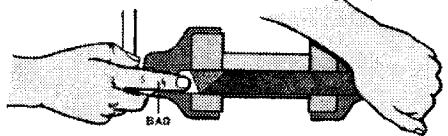
Elements of Machine Work

by Robert H. Smith

Here it is, the companion book to *Advanced Machine Work* (AMW). And it's quite a nice book even though it covers simpler material than AMW. But first an explanation is in order.

In the preface of our 1919 AMW reprint, Smith mentions *Principles of Machine* as being the companion book. In 1910 that book was entitled "Elements". That same year, what was then "Principles" was greatly expanded to become "Advanced". We could have reprinted 1910 "Principles" but everything in it was repeated in 1919 "Advanced", so I don't think you'd let me sell you something you already have. Confused? I sure am. But that's never stopped me. Just trust me when I tell you that this is the same book mentioned in "Advanced" as the companion tome.

Contents include: materials used for machine construction, measuring, lay-



Companion to Advanced Machine Work

ing out, chipping, tool grinding, files, hand and machine filing, scrapers, scraping and standard surface plates, polishing, annealing, hardening & tempering, high-speed steel, case-hardening, pipe and pipe fittings, hand and machine methods of pip-

ing, straightening and bending, peening and riveting, hand drilling, soldering, brazing, babbittting, power transmission, aligning and leveling shafting and installing machines, and more.

If you have *Advanced Machine Work* (and if you don't, then why not?), you know how this book is laid out: lots of illustrations and step-by-step instructions. It is nowhere as large as Advanced, but it does an excellent job on the basic material it presents. A lot of this may be too basic for you, but I'm sure you'll learn something new nonetheless.

So order a copy so that you have both of Smith's classic books. Great material, but you already know that. Get one!

5 1/2 x 8 1/2 hardcover 192 pages
No. 21770 \$18.95

Advanced Machine Work

by Robert H. Smith
reprinted by Lindsay Publications

Here's the best general machine shop book I've ever seen old or new. Smith brought out this book in 1915, updating it in 1925. That makes it new enough to still be of great value, but old enough to contain a many techniques that are no longer taught.

You get easy-to-read text, step-by-step instructions, and great illustrations. Modern books are prettier, but they cannot possibly do a better job of teaching.

"Advanced" covers everything you can imagine from basic operation of a micrometer and vernier caliper, to the testing of machine tools for accuracy. You'll learn the different methods of turning tapers and their fitting, detailed instructions on cutting threads, making bolts and nuts, face plates and chucks, mounting work, turning flanges and pulleys, boring, threading, cutting square threads bolts and nuts, cutting multiple threads, knurling, and much more.

You'll learn about drilling jigs, eccentric turning, facing large cylinders, use of steadies and followers, external and internal grinding, and the grinding of piston rings, milling cutters, reamers, and more.

"Prepared for students in technical, manual training, and trade schools, and for the apprentice and the machinist in the shop."

FIG. 19. — GRINDING PLAIN MILLING CUTTER.

Chapter nine covers planers and their use. Learn to plane keyways, lathe beds, vises, and more.

In learning to use a milling machine you'll groove taps, flute reamers, mill T-slots in a circular table and more.

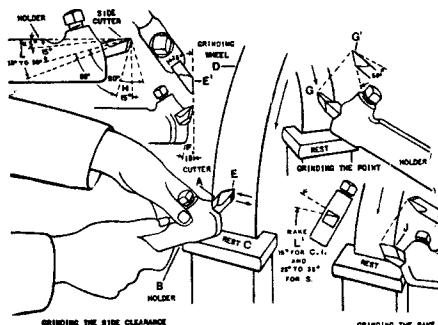


FIG. 66. — GRINDING A SIDE TOOL CUTTER IN HOLDER.

And there's so much more on everything from gear cutting to making mandrels, taps, twist drills, using indicators, sine bars and more. You'll learn how to make expensive tools that you now buy. You'll even learn how to check the accuracy of lathes, milling machines, drill presses, and lead screws, and even use of optical flats to measure to millions of an inch!

Just about everything you can imagine in amazing detail. This baby delivers! A bargain! Worth twice the price. I recommend it highly. People rave about it! Order yourself a copy today! 6 x 9 hardcover 800 pages heavily illustrated

No. 4236 \$29.95

A "Damned Fool" Book!

People who have seen this book claim
"Anyone who considers himself a
machinist and doesn't have a copy of this
must be a damned fool!"

(I can identify with that...)

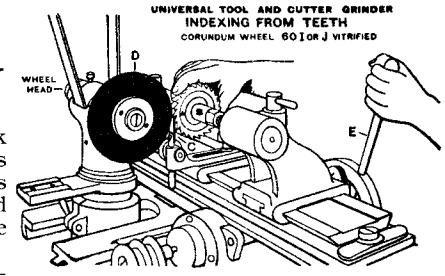


FIG. 19. — GRINDING PLAIN MILLING CUTTER.

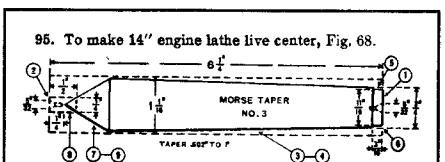


FIG. 68. — SCHEDULE DRAWING.

MAKING ENGINE LATHE LIVE CENTER 353

Specifications: Material, machine steel $\frac{1}{8}$ " to $\frac{1}{2}$ " large; weight, 1 lb. 9 oz. Hardness, 15 to 18 (sclerometer). High-speed steel, or stellite cutting tools.

Time: Study drawing and schedule in advance, 5 min. — Oil lathe, 4 min. — Make center, 53 min. — Clean lathe, 3 min. — Total, 1 hr. 8 min.

SCHEDULE OF OPERATIONS, MACHINES AND TOOLS

OPERATIONS.	MACHINES, SPEEDS, FEEDS.	TOOLS.
Center. See that live center is nearly true and dead center in approximate alignment. Rough square to $6\frac{1}{2}$ " (1), (2).	Engine lathe, 12" to 16". 3d or 4th speed, or 50 F.P.M. Hand or power feed.	Dog, holder and cutting, 35° rake, calliper rule.
Recenter. Omit finish square. Turn taper shank 60° to 1" (3). Setter footstock to 156° or $\frac{1}{2}$, or use taper attachment. Rough turn taper (3), one end small, one end large. Terminate cut (4).	Turner, 3d speed. F.P.M. Hand or power feed.	Dividers.
Take off $1\frac{1}{2}$ " and about $\frac{1}{2}$ " (5), (6). Smooth out (5) with $1\frac{1}{2}$ " (7). Smooth out (6) with $2\frac{1}{2}$ " (8). Smooth out (7) with $2\frac{1}{2}$ " (9).	3d or 4th speed, or 70 F.P.M. Fine power feed — 140 to 1".	Holder and cutter, 35° rake, calipers, rule.
Smooth turn tapered part to $4\frac{1}{2}$ " (10) to cut. Round center (10). Reverse work and set tool at 30° approximately, with work. Rough turn point of center (7), to leave stem (8), as shown, seven or eight cuts.	3d or 4th speed, or 70 F.P.M. Fine power feed — 140 to 1".	Morse tapering gage No. 3, chalk or Prussian blue.
To finish point (9), place center in live spindle. See Truing centers, p. 114. Stamp name on (1).	2d or 3d speed, or 50 F.P.M. Medium power feed — 80 to 1", or hand feed. 2d or 3d speed, or 50 F.P.M. Hand feed. Vise, copper jaws.	Holder and cutter, graver. Center gage.

Information. — Live centers are usually machine steel. Dead centers are carbon steel fitted to footstock spindle and of a length that when spindle is run back nearly as far as it will go, the center will be forced out. The conical point is hardened and tempered to a straw color and often ground. If a center is made of annealed carbon steel, the cutting speeds must have to be reduced

Making the Small Shop Profitable

by John Van Deventer
reprinted by Lindsay Publications

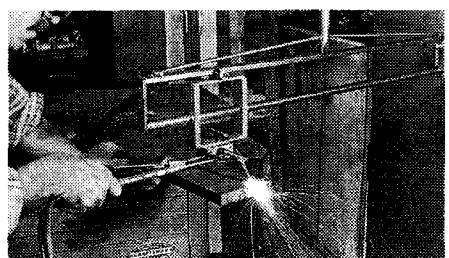
You get 72 different articles taken from WWI issues of American Machinist Magazine, most illustrated, covering such topics as ideas for the small shop blacksmith, chucks and turning, various ways of pulling

keys, end mill for babbitt, prevent local shrinkage in aluminum casting, profit making devices for turning, boring and turning kinks, the small shop grinding wheel, knurling in the small shop, getting "into" the

small shop, making patterns and castings for the small shop, boring pump chambers in the drilling machine, a variety of expanding arbors, slide rest kinks and cutting tool stunts, and much more.

This is meant to be educational, directly aimed at the one or two-man shop struggling with less-than-the-best equipment and less-than-adequate education. You'll find a lot of useful information here. But I'd rather promote it as fun. Order a copy of this. I think you'll like it. 8 1/2 x 11 softcover 113 pages

No. 21044 \$9.95



Build a Radial Arm Flame-Cutter

by Richard Walker

Cutting steel with an oxy-acetylene rig free hand can result in some pretty rough work unless you're experienced. Build this rig to help you cut beautiful circles and straight lines. The results are astounding. You'll need a milling machine, lathe, welder and scrap steel. But even if you have to farm the machining out, Walker estimates it might not cost anymore than \$100. Neat machine. Get one. 7x9 booklet 20 pages

No. 1255 \$8.95

Shop Theory

by Henry Ford Trade School
reprinted by Lindsay Publications Inc

"Eliminating all non-essentials, this book gives you a quick working knowledge of the basic tools, machines, and instruments, and the fundamental operations of machine shop work. It tells you how all the machines and tools used were developed, how they are constructed, and how to operate them. It explains heat treatment and gearing. It includes the mathematics needed for shop work, and stresses safety rules. Every step of machine shop work is pictured clearly both in text and illustration. An industry-developed shop course which already has helped prepare thousands of men for payroll jobs."

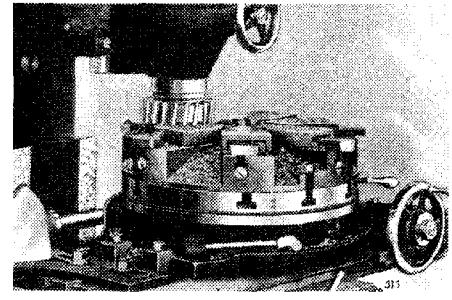
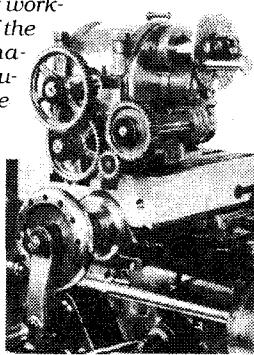
This book started out as mimeographed sheets, but so many people wanted copies that the school published the notes as a book. By the time this edition was released more than 150,000 copies had been distributed to schools all over the country. And it no doubt helped win World War II.

This is the entire '42 edition type written, loaded with drawings and photographs. Chapters include decimal equivalents, formulas, small tools, rules, micrometers, vernier gages, chisels and chipping, hack saws and sawing, files and filing, soldering, shop review, drills and drilling, tapers, threads, gearing, cutting tools, shaper, planer, lathes, turret lathes, milling machine, gages and gage blocks, heat treatment, abrasives and grinding wheels, grinding machines, and routing of bench tool work.

This is a gem. There are many machine shop books on the market. Although this edition was abandoned by Ford, probably being replaced by something more modern, it is still one of the best books of its type around.

Need a good basic machine shop book? Get this one. You'll like it. 8 1/2 x 11 softcover 267 pages

No. 20064 \$16.95



Treatise on Milling and Milling Machines

by Cincinnati Milling Machine Co
reprinted by Lindsay Publications

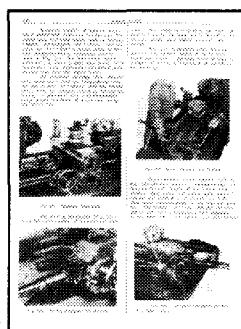
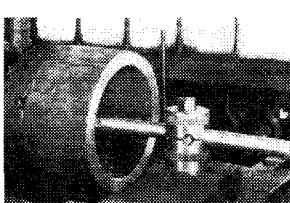
In 1919 Cincinnati published this book to teach machinists about the significant changes and uses of milling machines that had resulted from World War One. Despite its age, this book can teach you a lot, too.

You'll find page after page of great photographs, drawings, and easy-to-read text that explains everything from the construction of milling machines and their installation, to the use of jigs, milling cutters, and indexing heads. You get loads of tables, simple and yet detailed explanations on how to make necessary calculations (should be easy with today's pocket calculators), and even tips on unusual milling jobs. And there is much more.

Although most of the examples are for horizontal milling machines, the vertical model is also shown and discussed. Most operations are common to both machines. You'll find that the lessons taught here are valuable regardless of the type of machine you have.

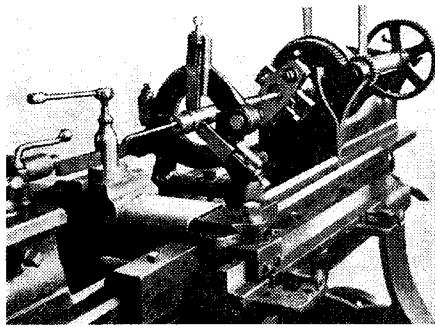
This is a gem of a book containing a wealth of information for any machinist — and that includes you. Put a copy in your machine shop reference library. It's excellent! 5 1/2 x 8 1/2 softcover 409 pages

No. 20358 \$13.95



CONTENTS

Construction and Use of Milling Machines
• Erection, Care and Adjustment of Milling Machines • Toolroom Millers — The Dividing Head, etc • Setting up the Machine • Analysis of the Process of Milling
• Milling Machine Feeds • Speeds of Milling Cutters • Stream Lubrication — Cutter and Work-Cooling System • Milling Cutters — Notes on the Design & Efficiency of Modern Cutters • Cutter Sharpening • Power Required to do Milling • Various Methods of Milling • Milling Jigs and Fixtures • Sizing and Cutting of Spur Gears • Shop Trigonometry — Bevel Gears and their Calculation — Instructions for Cutting Spiral Gear Cutting — Calculations, Formulas, Tables, etc • Worm Gearing — Calculations and Methods of Cutting • Continued Fractions and their Application to Shop Problems — Angular Indexing • Change Gears for Cutting Spirals • Cams — Tables for Setting the Milling Machine for Milling Spiral Cams • Tables of Natural Trigonometric Functions



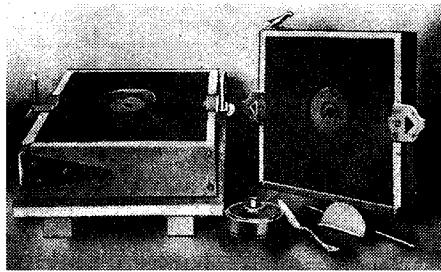
Machinery's Reference Series No. 10

Examples of Machine Shop Practice

by H. P. Fairfield
reprinted by Lindsay Publications

Let a turn-of-the-century machinist show you how to turn a bevel gear blank, learn which rotary cutter to use, how to set the depth, make trial cuts, and finish the gear.

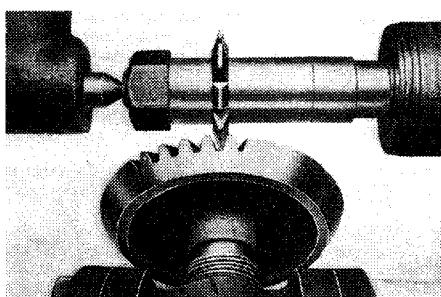
In the second part you start with a blueprint, create the wooden pattern and ram up the sand mold. Then you'll true up the casting, bore it, ream it, machine the recess and the circumference, and more to turn out a beautiful worm gear.



The last section will teach you how to make a spindle. A spindle is a shaft used in a boring mill, drill press, milling machine, lathe, etc., and usually has a threaded nose, and tapered hole to hold a collet, an arbor, or a pointed center. For instance, the headstock and tailstock on Gingery's homebuilt lathe is bored to accept No. 1 Morse taper. You'll learn about spindle drilling, boring, reaming, and finishing the spindle.

This is a small, jam-packed booklet. Lots of useful info even for the home machinist. If you've built the Gingery machine shop and are wondering what to do with it, try cutting a worm gear. Great reading. Inexpensive. Get a copy and get started. 5 1/2 x 8 1/2 booklet 48 pages

Cat. no. 21400 \$4.95



Accurate Tool Work

by Goodrich and Stanley
reprinted by Lindsay Publications

We haven't offered this in a couple of years. We just printed a few more of this gem because so many people still ask for it.

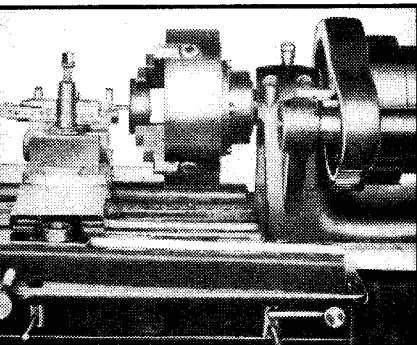
If you're building a solid walnut cabinet to store your hair-piece and your girlie magazines, you don't have to be much more accurate than 1/32" with the table saw. But if you want to build a steam engine or a tool grinder, that kind of tolerance just ain't gonna hack it. You'll need precision. And you can learn about precision from turn-of-the-century machinists right here.

You get well-illustrated how-to. Check out the table of contents, and you'll see what I mean. Besides learning to measure dovetail slides and V-ways, or making index dials for your dividing head, you'll build a stand for a microscope and use it to examine, among other things, cutters for that engraving machine you want to build.

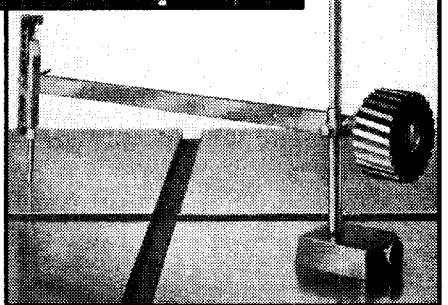
Within each section are paragraphs with titles like: stops for setting the miller table, making a pair of plates from a master, an accurate grooving operation, boring small deep holes, correcting the hardened master, and more.

Excellent book with unusual information written by people who did it. Good stuff. Get a copy! 5 1/2 x 8 1/2 softcover 217 pages

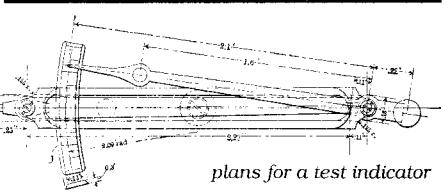
No. 4821 \$11.95



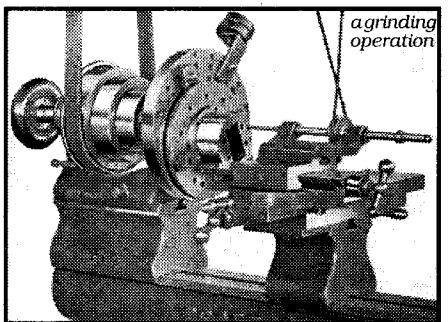
(left) Indicating rear face of a chuck job.



(below) Testing a surface plate



plans for a test indicator



a grinding operation

introduction

...Where formerly but few men in the shops were directly interested in... the methods by which the holes in a jig could be accurately located and bored, today there are thousands of toolmakers who are employing refined processes, precision tools and appliances for executing this class of work. Many methods and devices originating in watch factories and similar establishments for accomplishing very accurate results were for a considerable period confined almost exclusively to such institutions...

The master plate, disk, button and refined test indicator processes have been extended from watch-tool to other classes of accurate tool work... Closely allied with these devices... is the compound microscope, which with cross hairs and conveniently arranged micrometer screws constitutes a testing and measuring appliance having an innumerable number of practical applications in connection with the work of the toolmaker.

We have endeavored in the following pages to present, in convenient form, information on various phases of tool work contained in articles published in the past few months in the American Machinist...

There is no branch of tool work more important or more interesting than... these methods, including the use of master plates, buttons, disks, size blocks, etc., have therefore been treated at length, together with processes of making master plates for various purposes, the use of test indicators, accurate gages, the microscope and other appliances...

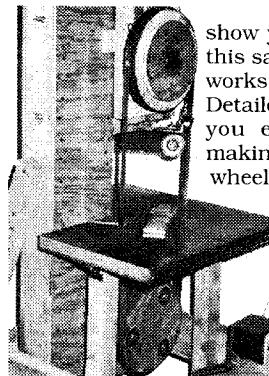
Contents

Locating And Boring Holes In Drill Jigs; Locating And Boring Oblique Holes In Jigs; Economical Jig Work On The Milling Machine; Boring Holes On The Miller And Checking With Verniers; A Precision Drilling And Reaming Machine; Master Plates And How They Are Made; Master Plates And Their Uses In Die Making; Master Plates Used In Making Watch Tools; Trigonometry In The Tool Room; A Tool For Laying Out Angles; Measuring Dovetail Slides, Gibs And V's; A Gage For Producing Accurate Tapers; The Microscope In The Tool Room; The Microscope In The Manufacturing Plant; Making A Set Of Accurate Index Dials; Inspecting Tools With The Test Indicator; A Universal Indicator And Some Of Its Applications; A New Swedish Combination Gaging System; Setting, Laying Out And Testing Work With The Swedish Gages

Metal Cutting Bandsaw

by David Wimberley

Build a bandsaw powerful and sturdy enough to cut metal to precise dimensions. A good bandsaw can simplify many metal projects, and often make otherwise impossible projects feasible.



without the use of a lathe.

This machine has 7 1/2" wheels which move a 1/2" blade. Ball bearing blade guides twist the blade as it passes through the table allowing you to make extra long cuts. Although the throat is not adjustable because of the twisted blade, the saw can cut heavy material beautifully. The table does not tilt. Dozens of detailed drawings show you all the tricks of building every part of the saw from motor drive mechanism to wheel tilt and tensioning equipment.

Get a copy of this. Great how-to! It will make a valuable addition to your shop. Great plans to build from or adapt. 5 1/2 x 8 1/2 booklet - jam packed - 22 pages

No. 891

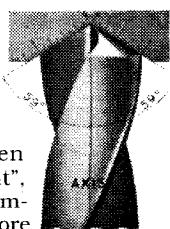
\$4.95

Handbook for Drillers

by the Cleveland Twist Drill Co.

reprinted by Lindsay Publications

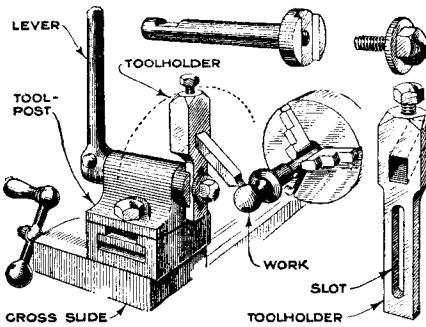
Learn about the parts of a twist drill, tips on grinding or sharpening, correct feeds and speeds, tips on drilling hard materials, brass, use of cutting compound, and more. Chapter 5 covers common errors and their results, including broken tangs, how to "drift out", using a lead hammer, warming high speed drills before using, and more. You'll find tables of feeds and speeds for drills from the tiniest numbered drill to 3" dia. drills with Morse taper shanks. Finally you'll discover several pages of advertising promoting Cleveland Twist drills, reamers, counterbores, end mills and more.



From 1925. It was intended to teach machinists the underlying theory of twist drills. Order a copy! Inexpensive! You'll like it. 4 1/2 x 8 booklet 48 pages heavily illustrated

No. 20056

\$3.95



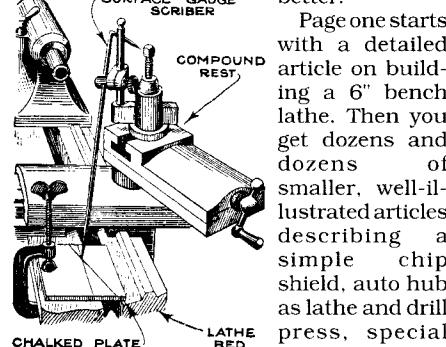
Ball-Turning Tool That Possesses Some Novel Features: It may be Adapted to Any Engine Lathe

Lathe Handbook No. 1

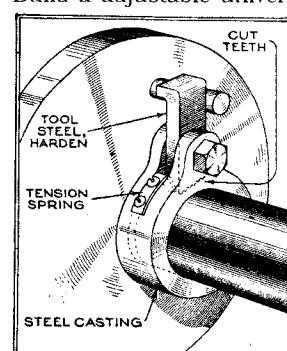
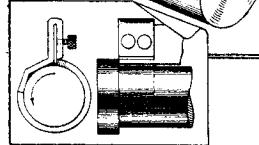
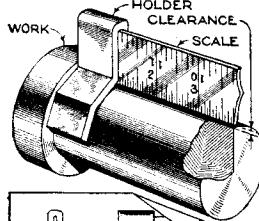
by Popular Mechanics

reprinted by Lindsay Publications

Great book! You get a compilation of metal lathe articles that ran in the pages of POPULAR MECHANICS magazine prior to 1925. Great ideas and the illustrations are even better!



attachments, lathe tool for radius cutting,



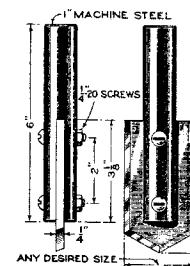
and inexpensive, and definitely worth having. Order a copy! 6x9 softcover 87 pages

No. 20838

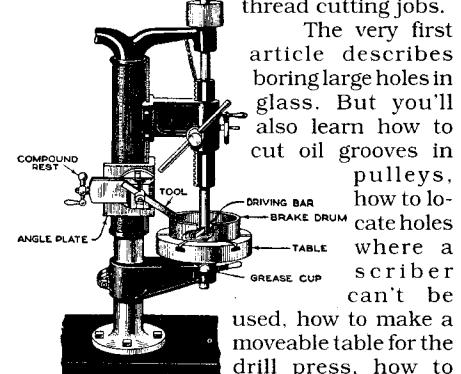
Drilling and Thread Cutting Handbook

reprinted by Lindsay Publications

"A compilation of 301 experiences in the drilling of metal and the cutting of threads, showing not only how to use drills, and tapes and dies, but how to make devices for special requirements in this work. With 298 illustrations."



If you've seen PM's Lathe Handbook No. 1 elsewhere in this catalog, then you know what this is. It's a 1925 companion text compiled from short articles that had run in previous issues of Popular Science magazine. Articles are broken into nine categories: 58 articles on special methods for handling drilling and boring jobs, 75 articles on special tools and devices for drilling, 31 articles on how to make drill bits and boring bars, 23 articles on ideas on drill presses, 22 articles on special methods of reaming and broaching, 18 articles on methods and devices for thread cutting, 15 articles on taps and how to handle them, 16 articles on dies and how to handle them, and 43 articles on unusual drilling and thread cutting jobs.



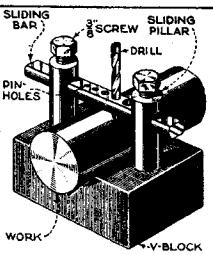
The very first article describes boring large holes in glass. But you'll also learn how to cut oil grooves in pulleys, how to locate holes where a scribe can't be used, how to make a moveable table for the drill press, how to build a rapid jig clamp,

how to make a homemade flexible shaft boring machine, and much, much more.

I'm sure a lot of this stuff is practically useless. So what? Even if you never use anything in this book, the short stories and dynamite illustrations will keep you entertained for hours!

Great stuff. Definitely worth having. Order a copy! 6x9 softcover 94 pp

No. 21117



\$7.95

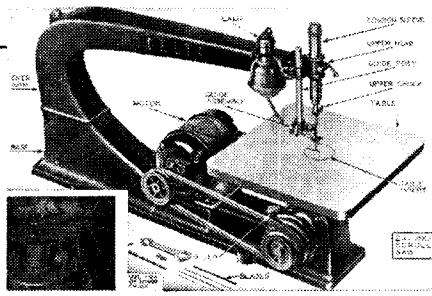
Getting the Most Out of Your Bandsaw and Scroll Saw

by Delta
reprinted by Lindsay Publications

From the 1930's comes this booklet that will show you how to put your Delta scroll saw and bandsaw to work. Covers adjustments and use. Some metalworking, but mostly wood. Valuable tools when making foundry patterns. Heavily illustrated. 6x9 booklet 48 pages

No. 21559

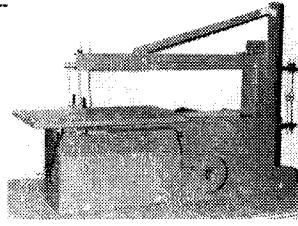
\$5.95



Build a 26" Scroll Saw

by Sun Thrift

"A scroll saw in the 26-inch size can be an expensive item to purchase but you can build a rugged and very useful machine... All materials may be obtained locally and all connections are made with bolts or screws, eliminating the need for any special castings or welding."

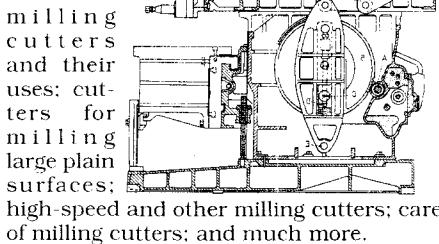


You'll find this saw uses common 6 1/2" pinned-end coping saw blades available almost anywhere. Most of the machine frame is built of 2x4 fir lumber. Angle iron, threaded rods, drill rod and other commonly available stock is used to build the rest of the machine.

Drilling and Surfacing Practice

by Colvin and Stanley

From 1936 you get chapters on: drills and drilling machines; drill points and troubles; drill shanks, speeds and feeds; deep-hole drilling; types of drilling machines; design, construction, and the use of reamers; taps and screw threads; planers, shapers and slotters; care of planers; planer tools; methods of driving planers; planers and their work; shapers; shaper tools and work; the slotting machine; types of milling machines; universal indexing centers; milling-machine attachments; cutting helices on the milling machine; milling cutters;



millers and their uses; cutters for milling large plain surfaces; high-speed and other milling cutters; care of milling cutters; and much more.

Great book. It's entertaining, and it's fast reading. I think you'll like it. Get a copy. 5 1/2 x 8 1/2 softcover 431 pages

No. 21729

\$19.95

Layout and Floor Work

by J. W. Barritt
reprinted by Lindsay Publications

More great how-to just like "Lathe Operations" and "Shaper Operations".

Here, you get lessons for laying out work for the horizontal boring mill, the slotter, the shaper, the planer, and the drill press.

In the next section you get miscellaneous machine shop skills, some of which are quite useful and others probably won't be for the home shop. You get floor work with rope hitches, ladders, scaffolding, and blocking. You get lessons in basic drilling, tapping, driving studs, and chipping. Then you get several lessons entitled Babbittting solid bearings in place. Babbittting split bearings in place. Babbittting on a mandrel, pressing a gear on to a shaft, fitting keys,

fitting large bearings, fitting crank brasses, and assembling a large centerfugal pump.

Each lesson is well illustrated and described with detailed step-by-step how-to. Layout is an essential skill. And the Babbittting info is excellent and hard-to-find. Either section make this inexpensive book worth having. Order one. From 1937.

8 1/2 x 11 softcover 59 pages

No. 21508

\$8.95

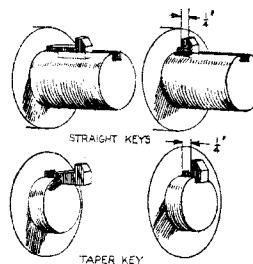


FIG. 2 Keys must be fitted correctly as otherwise they will cause trouble when in operation. A key in the wrong way in both the shaft and the bore, therefore fit the key way in both the shaft and the bore.

Disston Saw Tool and File Manual

by Henry Disston & Sons
reprinted by Lindsay Publications

When Disston published this book in the mid 1930's, the company was almost already a hundred years old. During that time they made everything from a cabinetmaker's backsaw to a 110" circular saw for the lumber industry. And this little booklet was, no doubt, distributed at no cost to promote their products.

You get a combination tool catalog and hints & tips manual that is very heavily illustrated and provides practical, useful information. It is thoroughly enjoyable reading.

You get info on the history of the company from Henry Disston and his carpenter's saw to monster inserted tooth milling saws of 1918. You'll learn how to choose and use hand saws, how to use a cross cutsaw, a rip saw, how to choose and use backsaws, hacksaws, how to choose the right hacksaw blade, and how to choose and use circular saws (table saws —or bench saws for our British readers). Learn how to choose and use narrow bandsaws, try squares and bevels, gauges, levels, cabinet scrapers, files, and more. Learn how to sharpen a saw, and how to take care of all these tools.

And of course,



you'll be exposed to a full line of Disston products from hand trowels and hedge shears to a Triumph saw set and a pattern maker's saw. Most of the products are understandably geared toward woodworkers, but tools are tools. And if you don't like tools, then why are you reading this catalog? Great reading and a great price. Get a copy. 5 1/2 x 8 1/2 booklet 48 pages

No. 21982

\$5.95

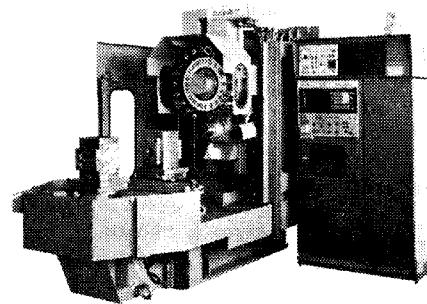
An Introduction to CNC Machining and Programming

by Gibbs & Crandall

Sure, you and I use a simple engine lathe, and perhaps a shaper and milling machine. But is that what industry uses? Nope. The big boys use Computer Numerically Controlled Machining Centers. Mount your stock or casting, punch up commands, and stand back. In a very short time, the world's best lathe operator (the computer), will turn out a beautifully machined piece exactly as you specified.

Ah! But that's the catch. A machinist these days has to know how to specify what he wants done. And here's a book that will introduce you to the world of CNC and teach you necessary programming.

Chapters include intro to CNC, machine design, tooling for CNC machining, work holding and loading, data preparation and input, terms and definitions associated with part programming, speeds and feeds, part programming, part programming calculations, computer-aided



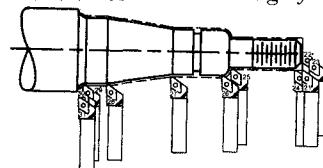
part programming, advanced techniques, EIA specifications, and more.

A small engine lathe is great for hobbyists, experimenters, inventors and the like. Some lathes and milling machines are being retrofitted for CNC. But if you want to get a good paying job as a machinist (very much in demand at the moment), CNC is what you'll have to know. If you want to expand your machine

shop into a small manufacturing operation, you might consider buying a used CNC Machining Center and putting it to work twelve hours a day. This book is a detailed introduction to the high tech world.

What's in this book will come as a shock to a few of readers of this catalog. You may be forced to use brain cells stashed between your ears for the first time in years. (My attitude? Well it's about time.) I'm sure you can do it. But do you have enough mental energy to get started? (If not, stop by. I'll hook my arc welder up to the bolts in your neck and get you jump started!).

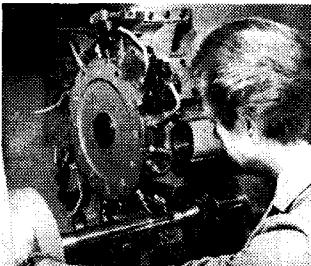
This is the future. Like everything else, the machine shop is now brain work rather than muscle work. And although you



may not have an immediate need for this info, you should at least be aware of what's going on out there. Good stuff. Worth reading. A little bit expensive, but a lot of book for the money. Order a copy. 6x9 hardcover 537 pages

No. 1482

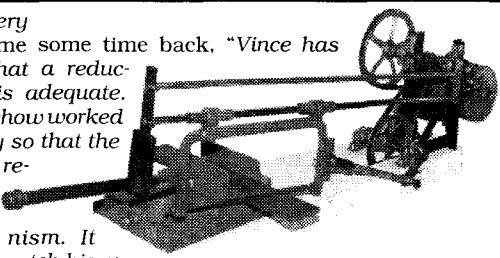
\$34.95



Build a Power Hacksaw with Vise

by Vincent Gingery

Dave wrote me some time back, "Vince has demonstrated that a reduction belt drive is adequate. And he has somehow worked out the geometry so that the blade lifts on the return stroke without any additional mechanism. It is impressive to watch his machine stroke the blade smoothly through a slab of steel. And it does it accurately and in good time too."



This is a 60 strokes-per-minute portable machine that uses a 14 tpi blade that will cut a 1/4" x 3" flat bar in a couple of minutes, yet weighs little more than 50 pounds. You'll need a 1/3 hp 1725 motor. Standard pulleys, belts and pillow blocks reduce the drive to 278 rpm. The only special equipment necessary is a 100 amp welder. All holes are drilled and tapped, so a drill press would be a great help, although not essential.

This is a Gingery-quality manual. You won't find better how-to anywhere. And this is a proven machine. Build one! Order a copy. 8 1/2 x 11 softcover 66 pages

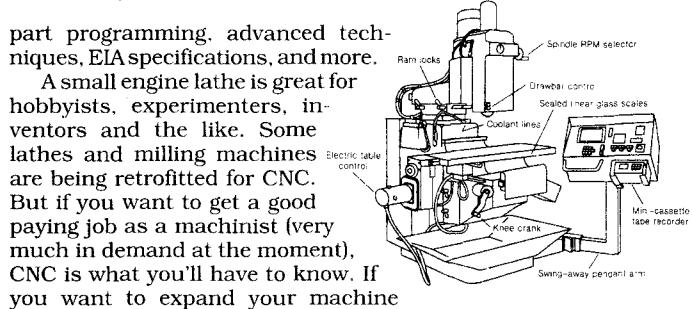
No. 1312

\$8.95

Designing and Building a Horizontal/Vertical Metal Cutting Bandsaw

by Vincent Gingery

Disgusted with a cheap \$200 import bandsaw, Vince built his own.



The actual saw table is 36" long and 9" wide. Most of the saw is bolted together from standard angle iron and strap, but there are a few welds. A 1/2 hp 1750 rpm motor powers the saw through a series of belts to achieve a blade speed of 159 feet minute which is right on target for cutting mild steel. Rate of descent is controlled through a mechanism build around a garage door spring. This of professional quality and performance with ball bearing blade guides and all the rest. You may want to design and build a coolant pump and catch pan.

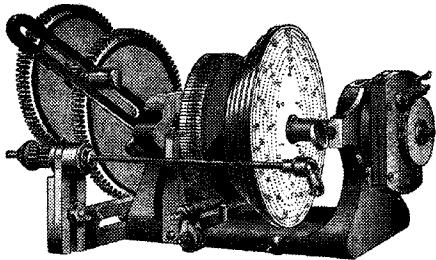
You need at least a nine inch lathe. The drive and idler wheels were fabricated from 8" diameter 3/8" thick steel pipe. They had a devil of time chucking sections in the lathe in order to turn them, but they pulled it off. The wheels drive a 14 teeth per inch raker of 94" length.

You'll also need a hacksaw, an electric drill, a drill press, and a torch is handy to cut section from the 8" pipe if your lathe can't do the job with a cutoff tool. Most of the machining is quite simple, but you need at least a 9" lathe, a 6" 3-jaw chuck, and a 6" four jaw. Only a few welds are needed, and they can be done with 75 amps.

You get the usual Gingery total how-to quality. Build it, modify it, or just dream about it. If nothing else, get a copy of this to make your Gingery library complete. Top rate! After all, it's a Gingery book. Get a copy. 5 1/2 x 8 1/2 x 11 softcover 167 pages

No. 1381

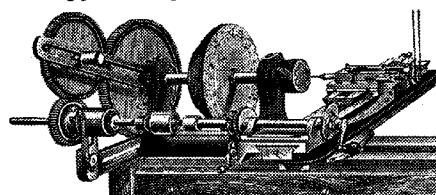
\$12.95



Ornamental Turning

By John Henry Evans

"Evans (1843-1919), like his English contemporaries the Holtzapffels, was a maker of high quality lathes, but he was also an accomplished turner and, for 33 years, the author of articles for the English Mechanic, a leading journal of the time."



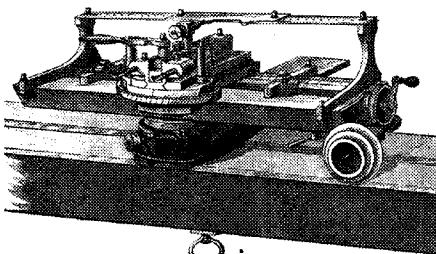
The author's broad engineering and practical experience, together with his literary skills, has made Ornamental Turning one of the most valuable works in its field. It provides a complete coverage of the subject in clearly written text supported by 192 detailed line drawings and 17 plates. Included is information available nowhere else: a chapter on Dawson's geometric slide rest, details on the design of many types of apparatus, and a brief chapter on electro-typing.

This complete reprint of the 1886 first edition makes this wealth of information once again available to turning enthusiasts."

Really a good book on ornamental turning. Nuts-and-bolts how-to. Illustrations of hardware and incredible sample turnings. Worth having. Consider it. 5 1/2 x 8 1/2 softcover 282 pages

No. 1475

\$22.50



How to Build a Pipe Bending Machine

by Vince Gingery

Bend pipe and make bedframes, chairs, handrails, and just about anything else your twisted imagination can cook up. This easy-to-build and inexpensive machine will bend up to 1" diameter pipe using hardwood dies. Need something bigger? Scale it up, make the lever arm longer, and buy a go-

rilla (your mother in law may be just as ugly, but not as strong...)

Vince will show you how to build this very simple machine that allows you to bend pipe from zero to 180°. And with appropriate dies you can bend solid round

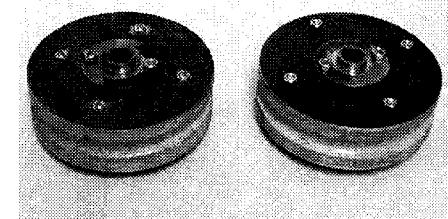
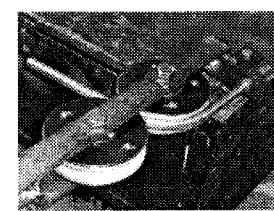
rod, flat bar, and square tubing as well.

The whole thing is built from 1/4" x 2" hot rolled steel strap. Other than a drill press and welder (just a few beads needed) only common hand tools are necessary.

Get a copy of this inexpensive book and build this inexpensive project. Gee... You could even learn to bend electrical conduit and get rid of those 38 extension cords running all over your shop! Build a rack, and torture your inlaws! The possibilities are endless.

Another quality Gingery publication. Get one. 5 1/2 x 8 1/2 booklet 48 pages No. 1468

\$8.95



Hasluck's Engine

reprinted by Lindsay Publications

Most of this booklet from 1903 covers

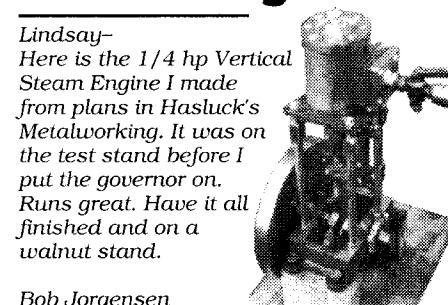
indirect compound indexing.

You'll learn about construction of the indexing mechanism, calculating runs of the index crank, selecting the index circle, using the sector, using index tables, calculating the moves for compound indexing, and simplifying the moves.

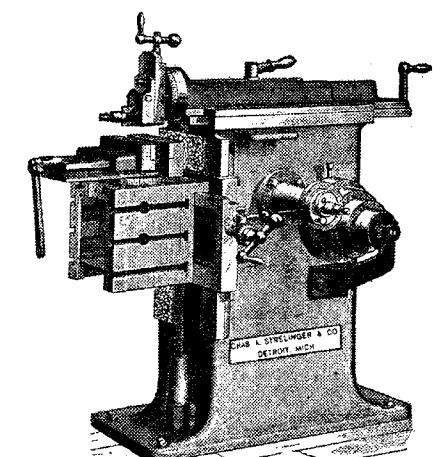
The second section covers the use of the spiral head which at that time was an innovation marketed by Brown & Sharpe.

A final section covers fractional indexing using two indexing plates and special spiral head. Three more pages of indexing tables are provided.

Some of the information should be quite useful to you. Some will not, but even so, what you learn should expand your knowledge to allow you to make more creative use of the dividing head you do have. Loaded with valuable info! Reasonably priced! Get a copy today 5 1/2 x 8 1/2 booklet 31 pages No. 869 \$4.00



Bob Jorgensen

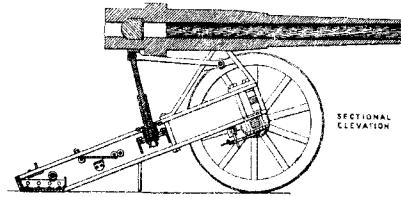


shaper from the 1895 Strelinger Tool Catalog elsewhere in this catalog

Model Making

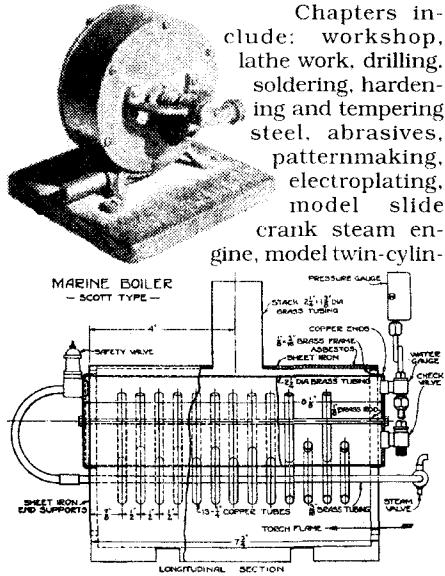
by Raymond F Yates
reprinted by Lindsay Publications

"A practical treatise for the amateur and professional mechanic - giving instructions



on the various processes and operation involved in modelmaking and the actual construction of numerous models, including steam engines, speedboats, guns, locomotives, cranes, etc. Lathe work, pattern work, electroplating, soft and hard soldering, grinding, drilling, etc., are also included."

Sounds like a great book doesn't it? Actually the claims are a little inflated because the author tries to cover too much. Each topic could be a book in itself. Still, it is fascinating, and guaranteed to fill your head with ideas.



Chapters include: workshop, lathe work, drilling, soldering, hardening and tempering steel, abrasives, patternmaking, electroplating, model slide crank steam engine, model twin-cylinder

der engine, single-cylinder engines, model twin-cylinder marine engine, flash steam plants, flash steam plant for model airplanes, model steam turbine, model boilers, boiler fittings, model hydroplane, lake freighter, gasoline engine, model steam locomotive tank, siege gun, steam yacht, 34" monoplane and much more!

Some of these projects need castings which are not available. But with all the dimensions and photos given, you should be able to modify and improve the designs. This is great raw material for the model builder.

So if you have a small lathe and want to build something in the worst way, or you just collect plans, or you just want a great book for a rainy afternoon, grab this gem from 1925. Loaded with great illustrations and great ideas. Don't pass it up. Order a copy today! 5 1/2 x 8 1/2 softcover 430 pages

No. 4325

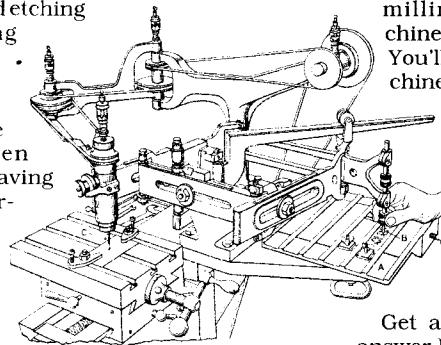
\$14.95

Graduating Engraving & Etching

Machinery's Blue Books
reprinted by Lindsay Publications

This well illustrated 1921 book reveals secrets of cutting lines into metal and plastic with routing machines.

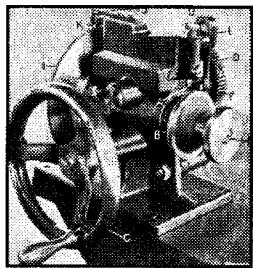
Chapters include graduating machines and their use, engraving machines and methods and etching and etching fluids. Within these chapters you'll see power-driven linear engraving engines, circular engines, a circular graduating machine used to put scales on astronomical instruments, machines that graduate numerous rules si-



multaneously, graduating with a pantograph and even a fixture for graduating in a milling machine.

You'll see machines (cross-section drawings included) that engrave with a tiny precision router mounted on a pantograph. And you'll see the products of their work: dies for date stamps, radio dials, and more.

Small, well illustrated, low cost. Get a copy. (And I won't take NO for answer.) 5 1/2 x 8 1/2 softcover 60 pages No. 21788 \$5.95

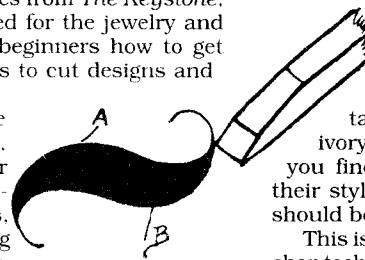


The Art of Engraving

reprinted by Lindsay Publications

These 1903 articles from *The Keystone*, a magazine published for the jewelry and optical trade teach beginners how to get started using gravers to cut designs and letters into metal.

Chapters include mechanical drawing, tools and materials for beginners, first exercises, block letters, methods of cutting block letters, script letters, cutting lowercase script letters, practical use of script letters, engraving coffin plates, engraving thimbles and inside of rings, engraving inscriptions in script. Old English, shaded Old English, engraving spoon handles, designing and engraving



ciphers, flower leaf ciphers and more!

You'll learn about gravers and their care, engraving tables, engraving script in metal, ivory, and even pearl! The illustrations you find are mostly concerning letters, their style and the method in which they should be cut.

This is an art, a skill, and not a machine shop technique. If you're into making knives, guns, spinning metal, creating jewelry or any type of decorative art, this is a rare book worth having. Get yourself a copy and put it in your reference library today! 5 1/2 x 8 1/2 softcover 199 pages No. 20617 \$10.95

Art of Coppersmithing

PRACTICAL TREATISE OF WORKING SHEET COPPER INTO ALL FORMS

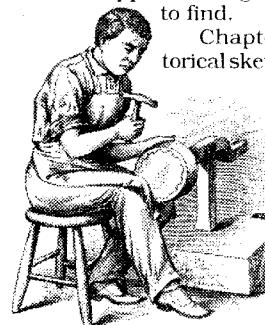
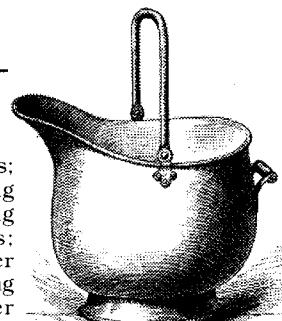
by John Fuller

Build me a copper brew kettle to cook my beer. Or a sand dome for my locomotive. Or a fish kettle. Here from 1893 you get one of the best copper working books you're going to find.

Chapters include historical sketch of copper; light coppersmithing; repairing and tinning; boy's second year; making washing coppers, making small brewing copperers; table of dimensions and capacity; mak-

ing hand bowls; making frying pans; making closet pans; making water balls; mounting for copper goods; glue pots and tea-kettles; oval tea-kettles; beer mullers; funnels; coffee pots; saucepans and pudding pots; stewpans; stock pots; fish kettles; brazing pans; tea boilers; warming pans; preserving pans, dripping pans, and much, much more.

Great book. 474 illustrations. Somewhat expensive, but it delivers quality. I think you'll like it. Get one. 6x9 softcover 327 pages Cat. no. 1355 \$25.00



Practical Metal Plate Work

by Paul N. Hasluck
reprinted by Lindsay Publications

Oh, I know what you're thinking. "Metal Plate" — quarter inch and thicker. Wrong! Very wrong! This dude was British. What he was talking about was sheet metal, and how to turn it into something a bit more exciting and, to my way of thinking, more useful than furnace duct work.

Chapters include the materials used; geometrical construction of plane figures; geometrical construction and development of solid figures; tool and appliances used; soldering and brazing; tinning, re-tinning, and galvanizing; examples of practical metal plate work; and examples of practical pattern drawing.

Remember this is same man who gave us the incredible book Metal Working — Tools, Materials, and Processes for the Handyman described elsewhere in this catalog. That book provides an excellent chapter on sheet metal, but this provides much more information, much more detail. You'll see all the stakes, hammers, punches, groovers, and shears you could want. You'll also see

a burring machine (or Jenny), bench standards, tube bend rollers (slip roll), a folding machine (brake), a bottom-closing machine, a paning down machine and much more.

You'll be shown how to make trays and bread pans. If you can do that successfully, you're on your way to building tools boxes of your own design. More difficult is the fabrication of a sauce pan, a ship's ventilator (air scoop), an oval bottom tea kettle and more. Once you have completed these lessons, you should be able to fabricate almost anything.

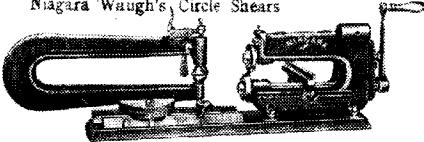
To get from flat sheet metal to a water tight three dimensional container requires a good pattern. You'll be shown all the necessary geometry to lay out the pattern without heavy theory.

This is practical how-to that was part of Hasluck's "Technical Instruction Series" of books. It's all straight-to-the-point and practical. If you work sheet metal, or plan to, this is something to have. Get a copy! 5 1/2 x 8 1/2 softcover 160 pages

No. 21591 \$9.95



Niagara Waugh's Circle Saeers



Niagara Machine and Tool Works

CATALOG NO. 50

reprinted by
Lindsay Publications

A catalog with wall-to-wall illustrations of "tools and machines for sheet metals: tinsmiths' and roofers' tools, presses and punches, squaring and rotary shears, etc."

Here, you'll see a bar folder, taper edger, square pan folder, open throat folder, power double lock folder, pan former, burrs and wirers for edgers, elbow edging machine, power setting down machine, cornice maker crimpler, heavy crimpler and beader, encased rim machine, bottom flanging machine, turret double seamer, back geared slip roll, corrugating rolls, curved shear, oval handle former, snips, hammers, tongs, lock seaming machine, corner notcher, foot

squaring shear, lever punch, punch presses and much, much more.

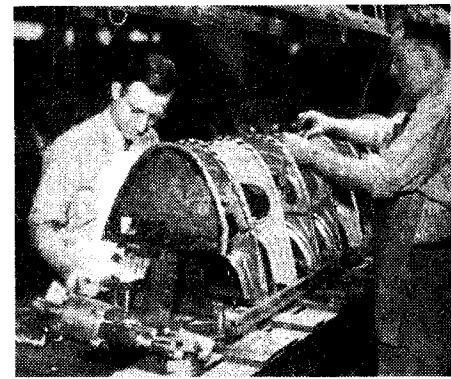
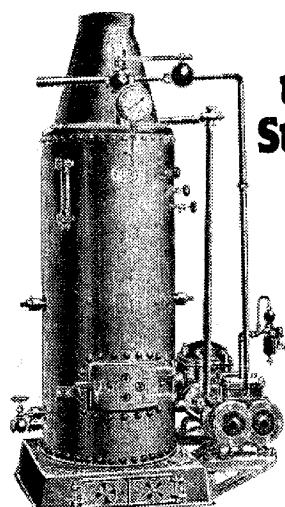
Grab a copy of this. The price is right. Every page has a wood cut or photograph of a fascinating machine. Interesting reading. Order a copy! 5 1/2 x 8 1/2 paperback 132 pages

No. 21915 \$9.95



from
the 1895
Strelinger
Tool
Catalog

No. 20692
(elsewhere
in this
catalog)



How to Do Aircraft Sheetmetal Work

by Norcross & Quinn
reprinted by Lindsay Publications

Have you ever seen the smooth contours and perfect transitions on the skin of a DC-3? How did they do that? Airplanes, like custom autos, are exquisite examples of sheet metal craftsmanship. This book will show you how it was done in 1942.

Chapters include blueprint reading; shop math; properties and standards of aircraft materials; how to measure; templates; aircraft sheetmetal layout; how to cut sheet; files and how to use them; forming, stamping, and hydraulic presses; drilling and how to do it; how to rivet; jig assembly in modern aircraft factories; skin fitting; spot welding; and shop projects.

You learn to work sheet metal in the most basic terms. You'll see a man removing wrinkles from a curved sheet using a planishing hammer and bumping stake. And a man bending an extrusion to an irregular shape using a rawhide hammer over a V block. Or a man using a bucking bar while riveting. Or a man using a vixen file to rapidly trim an aluminum alloy sheet.

This is all nuts-and-bolts how-to. No fancy theory or math. One of the best sheet metal books

I've ever seen. Just what you need to help you restore your Bugatti. Or make a radio chassis or tool box. Excellent book. Get a copy. 5 1/2 x 8 1/2 paperback 285 pages

No. 21893 \$14.95

Dies- Their Construction and Use

by Joseph V. Woodworth
reprinted by Lindsay Publications

Dies mounted on a power press can turn sheet metal into complex forms like soft drink cans and auto fenders - all done at incredible speed with every piece being identical.

Learn how you can put dies to work in small manufacturing shops. Thirteen chapters will teach you about blanking dies, piercing dies, simple dies for use in the machine shop, gang and follow dies, use of dies for production of sheet metal parts, bending and forming dies and fixtures, perforating dies, dies for curling, wiring and seaming, draw dies, coining processes, methods for feeding stock, hardening and tempering of dies, and more.

You get page after page of drawings and photos showing all kinds of dies for applications from turning a square of sheet metal

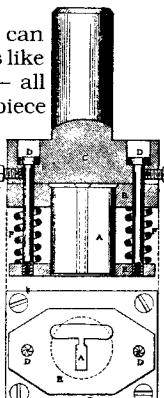


FIG. 142.—THE PUNCH.

into a tube in one hit, and punching holes, to the fabrication of those fancy old tins that held tea, tobacco, and crackers decades ago. You'll see a variety of presses - most of them in the smaller sizes.

You'll learn how to make simple dies in smaller sizes for producing all kinds of things from safety pins to punching fancy leather pieces for shoes. You'll even see a compressed air drop hammer used for making sheet metal caskets!

You can learn right here how to make simple, low-cost dies in your own shop that produce items you can use yourself or sell as a sideline. Great information on a mass production tool useful to the small time operator.

Very well illustrated. You'll like it. Get a copy. 5 1/2 x 8 1/2 softcover. 400 pages. No. 4309

\$15.95

Pressworking of Metals

by C. W. Hinman
reprinted by Lindsay Publications

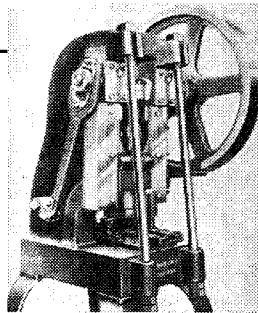
More parts can be made faster using less metal if they stamped and formed out of sheet metal, whether they be the soda cans or the fenders on your car. It's all done with the equipment described in this book.

Chapters include: introduction; types of presses and their selection; stamping and forming mild steels; stamping and forming nonferrous metals; pressworking nonmetallic materials; press accessories and attachments; chutes, magazines, hoppers, roll reeds and dials; blanking and cutting dies; two-step die operation; progressive dies; developing the blank and scrap strip; shaving, burnishing, broaching, and trimming; section dies and inserts; bending, forming, embossing, and folding; assem-

bling dies; coining, swaging, cold sizing, and extruding; drawing dies; low-cost tools for limited production; special dies and novel operations; and much more.

You get brief, to-the-point how-to, hints and tips, and details on using a press to work metal. I think it makes a natural companion to Woodworth's "Dies: Their Construction and Use..." Beautifully illustrated. From 1941. Excellent. Get a copy! 5 1/2 x 8 1/2 softcover 443 pages No. 21621

\$19.95



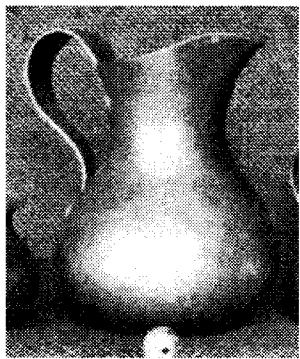
Copper Work

by Augustus F. Rose
reprinted by Lindsay Publications

A 1908 manual for high school students. Some of the projects are very simple, but others are challenging. You'll learn what types of saws, hammers, and anvils to use. You'll learn how to make simple objects such as hinges and finger pulls, and then you'll graduate to box corners.

The fun starts when you anneal a sheet of copper and start working it on an anvil to produce a pitcher, porringer, bowel, ink pot, or a spoon. You'll learn how to make rivets, draw wire and small tubing, polish, make a stamp out of tool steel, and even some simple enameling.

This book is designed for young people



who are to be assisted by a teacher. The instructions are therefore brief, maybe even too brief, and the illustrations numerous. But I expect that you have at least a little mechanical ability, so you shouldn't need extremely detailed instructions anyway. Many pages are covered entirely with photos and/or drawings to instruct and inspire.

I won't tell you this is the greatest book ever written, but it is a lot of book for a modest price. It's just for the fun of it.

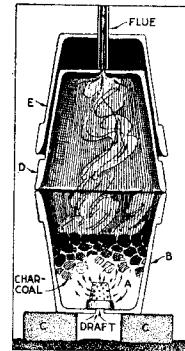
Or perhaps you can turn out a product to sell at arts & crafts shows. No matter what your angle, I think you'll like this. Order a copy. 5 1/2 x 8 1/2 softcover 123 pages No. 20145

\$7.95

Shop Notes for 1919

by Pop Mechanics Magazine
reprinted by Lindsay Publications Inc

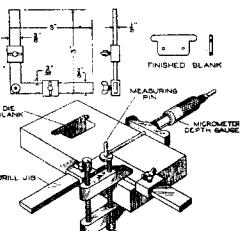
Here you get a collection of short illustrated articles from the pages of 1919 Pop Mechanics magazine on how to build everything from a spot welder to an air boat. Actually, most of the articles are just a paragraph with an illustration. You're expected to have some mechanical expertise so that you can fill in the details.



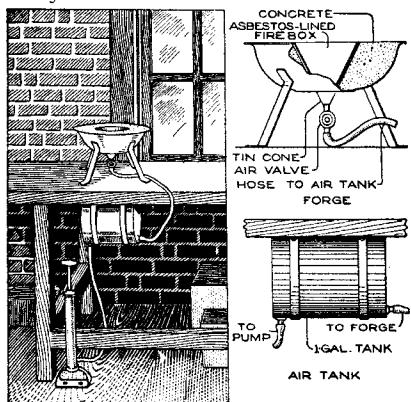
You may have seen the famous series of Shop Notes that were common in the 30's, 40's and 50's. This is their grand-daddy. It's kind of like the Boy Mechanic for grown men.

You get page after page of hints and tips for building a water barrel mixer, revolving feed mixer, a nineteen foot runabout, horse stalls, garden sprayer, gasoline torch, bottle cutter, a metal shear for the vise, rig for reboring engine cylinder by hand, baseball backstop, simple method for making core prints without a lathe, homemade paper bailing machine (great for recycling), power drill press from pipes and fittings, swamp-buggy-like boat with airplane propeller, resawing device for the bandsaw, homemade mechanical drafting machine, hydroplane catamaran and much, much more.

This stuff is old. Some of it useless unless you still drive a 1917 Maxwell and



The Piercings on Dies are Located Quickly and Accurately by Means of This Jig



This Concrete and Asbestos-Lined Blast Forge, Made for Temporary Use, Became a Permanent Shop Fixture

milk cows by hand. But much of it is timeless. It's about ideas. Even if you never build a thing, you'll have fun reading and dreaming, just like the Boy Mechanic series.

Great stuff. Wall-to-wall illustrations. Fun reading. Consider it carefully. 6x9 softcover 222 pages No. 22040

\$14.95

English Wheel Book

by David L. Anderson

The English Wheel, sometimes called the wheeling machine, is a simple non-powered machine for forming a large radius bends in sheet metal. It can form simple bends or compound shapes, i.e. domed or crowned panels...

Anderson uses the machine to create patch panels for auto restoration projects. You can build one, too. You'll need a welder and some means of cutting metal (torch or bandsaw) as well as drilling and tapping.

Optional, a milling machine for preparing the lower wheel slide (an optional non-machined method is also given) and a lathe for preparing the wheels would be nice. Otherwise wheels can be purchased complete for the machining jobbed out to a machine shop...

You get drawings, photos, formulas and several large sheets of plans. A rare machine, and rare plans. Worth having. 8 1/2 x 11 softcover 40 pages with four plan sheets No. 1336 \$19.00

Build a Slip Roll Machine

by Vince Gingery

Use three 1 1/2" diameter steel rolls made from pipe in a simple configuration to turn a flat sheet of 24" wide metal into cylinders of adjustable diameters. Vince used a bandsaw, drill press, and a welder to build this useful machine.

A valuable tool for sheet metal workers. Usual Gingery quality. Get a copy. 8 1/2 x 11 booklet 40 pages No. 1335 \$9.95

projects.

Sure, you can turn a bronze bushing, but can you turn a sheet of copper into a beautiful vase or candlestick?

A simply written 1936 technical school textbook. Very few people, including expert metal workers, know how to spin. You can learn right here. Order a copy! 5 1/2 x 8 1/2 softcover 80 pages No. 4830 \$9.95

Metal Spinning

for Craftsmen, Instructors, & Students
by Reagan & Smith

You can chuck a piece of sheet metal in a lathe and using simple tools spin it into a smoothly contoured shape that can become anything from a teapot to a missile nose cone. Here you'll learn historical facts about metal spinning, why people are interested in spinning, the necessary mechanical setups, spinning tools, chucks for spinning, the treatment of different metals, lubricants to be used, the actual process of spinning, and educational as well as useful

Metal Spinning

by Fred Crawshaw
reprinted by Lindsay Publications

Spin metal! This small Popular Mechanics Handbook appeared in 1909. Chapters include the lathe and its parts, tools, the preparation of metal for spinning, how to spin a hollow dish, how to spin a deep dish, how to spin a vase, and more. You get many illustrations, most of them being simple drawings of the tools and chucks you'll need.

It's a small book with right-to-the-point instructions. Spin the top terminal for your lightning bolt generator, or a bullet-shaped headlight shell for your 1938 Desoto! It's possible. Great little book at a great little price! Get one. 4 1/2 x 7 softcover 72 pages No. 20714 \$5.95

Metal Spinning

from Machinery Magazine
reprinted by Lindsay Publications

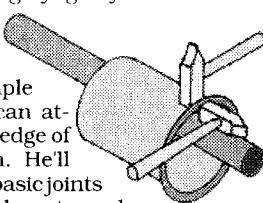
Here's a great little 1910 booklet from the publishers of Machinery magazine that will introduce you to metal spinning. You'll be shown the tools, chucks, and forms, you'll need and how to use them. You'll see a zinc lamp shade spun in one operation, a German silver reflector for a light, copper and aluminum forms that look like spittoons, and more.

This is a great intro into converting sheet metal into beautiful and useful three dimensional forms. This is a skill to have. Order a copy. The price is too low. 5 1/2 x 8 1/2 booklet 38 pages No. 21370 \$4.95

Working Sheet Metal

by Dave Gingery

Let Dave Gingery get you started in working sheet metal with a hammer, a tree stump and a simple bar clamp you can attach to the front edge of your workbench. He'll show you all the basic joints and edges, and how to make them without fancy machines. He'll even show you how to make a gas tank. This is not the ultimate sheet metal book, just the straight scoop on how to get great results with simple tools from someone who has done it. Consider this carefully! 5 1/2 x 8 1/2 softcover 90 pages No. 1334 \$8.95



Dave Gingery Explains His Book...

This book was inspired when someone gave a friend of mine a furnace. Local sheet-metal people all wanted \$1000 or more to install it. My friend is almost as stingy and tight-fisted as you and I so he didn't go that route. Instead, I picked up a couple of sheets of galvanized metal, a couple of joints of prefab duct and fist full of "S" slips and drives and we did the job in a half day for less than \$75.00. ...We didn't have any of the fancy equipment for the job but we did it any way. That's what this book is about.

No photos of exotic equipment in these pages. And no instruction in using press-brakes, leaf-brakes, slip-rolls, bar-folders, turning machines, edgers, crimpers, lockformers or any of the commercially built equipment found in commercial shops... Instead, this book shows you how to do the work without machines.

Sheet metal work was my second trade and I worked it for years... So here I am showing how to produce what you need without the machines, and there is hardly a limit to what can be made.

The chapter on layout is brief but it covers all the basics. It would be no trouble at all to write 500 pages on pattern problems and examples alone. But that has been done very well by many others in the past. My message is that the principles are few and simple.

Gift Certificates

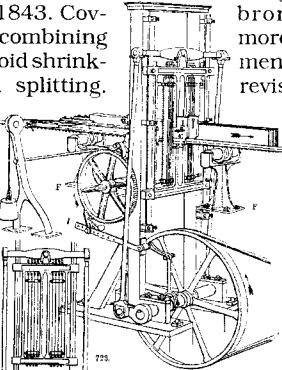
are available in any amount under a million dollars. We can't handle amounts over a million because I can't remember how many zeroes to write down. (I can't help it if I was born senile...)

ONE - MATERIALS. THEIR CHOICE, PREPARATION AND VARIOUS MODES OF WORKING THEM

by Charles Holtzapffel

Volume I from 1843. Covers materials: the combining of woods; how to avoid shrinkage, warping and splitting. Other more exotic materials: bone, shell, ivory, horn, tortoise are described; with explanations on how they are prepared, cut, bent, joined, molded and inlaid. Also covered are the use of amber, slate, marble, semi-precious and precious stones; the manufacture of cast and malleable iron; forging iron and steel; hardening and tempering; metal alloys most often used; casting and rounding; joining and rolling sheet metal; the various methods of soldering; and much more. 6x9 softcover 816 pages 300 illustrations.

No. 1357 \$24.95



TWO - CONSTRUCTION, ACTION, AND APPLICATION OF CUTTING TOOLS

by Charles Holtzapffel

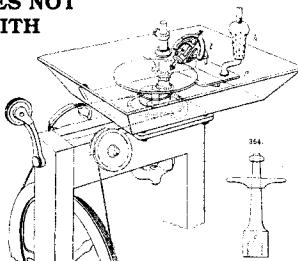
Volume II, 1846, covers the construction, action and application of cutting tools and the machines derived from hand tools. Covers types of chisels, plane irons, turning, boring, and screw cutting tools, saws, files, shears and punches, screw cutting apparatus, vises, spindles, and planing and shaping machines. 6x9 softcover 595 pages over 700 illustrations

No. 1358 \$22.95

THREE - ABRASIVE AND OTHER PROCESSES NOT ACCOMPLISHED WITH CUTTING TOOLS

by Charles and John Jacob Holtzapffel

Processes used to reduce and shape other than with cutting tools: the shaping and polishing of stone and marble; the grinding and sharpening of cutting tools to precise forms and angles; the producing of cylindrical, spherical, conical and plane surfaces by abrasion and surface grinding; glass cutting and etching, lens grinding and polishing; the use of diamonds in drilling and grinding; sharpening and setting the teeth



of saws; grinding of internal cylinders; lapidary work; gem and glass engraving; watchmaker's turning tools; varnishing, lacquering, and bronzing; and much more. An 1894 supplement adds 300 pages of revisions and 250 additional woodcuts. 6x9 softcover 816 pages 430 illustrations

No. 1359

\$32.50

FOUR - HAND OR SIMPLE TURNING

by John Jacob Holtzapffel

Covers simple lathe, division plate and index, boring collars, the slide rest, the spiral apparatus, lifting blocks and lengthening bearers; chucks and apparatus for fixing the various works in the lathe; the

Holtzapffel SERIES of Early Technology

elementary practice of softwood turning; hardwood and ivory turning; metal turning; and screw cutting. Also example projects of billiard ball, polyhedra, egg cups, candlesticks and much more. 1881 6x9 softcover 592 pages 771 figures

No. 1214 \$17.95

FIVE - ORNAMENTAL OR COMPLEX TURNING

by John Jacob Holtzapffel

Ornamental turning describing the various cutting frames and chucks, the ornamental sliderest (with additional appliances for fluting, angling, etc., and overhead motions); vertical, horizontal, universal and internal cutting frames; the drilling instrument and the eccentric, elliptical, epicycloidal and rose cutting frames;

the spherical or dome chuck; the segment plate and stops; eccentric and oval, straight line and rectilinear chucks; and the spherical rest. Numerous projects of incredible intricacy and beauty. More than 600 illustrations. 6x9 softcover 656 pages

No. 1215 \$17.95

Power and Machinery Employed in Manufactures

by U.S. Dept Interior, Census Office
reprinted by Lindsay Publications Inc

This incredible machinery picture book was released in 1888 as part of the 1880 census. You get wall-to-wall wood engravings of American industrial machinery.

The general table of contents includes General Letter of Transmittal; Statistics of Steam and Water Power Used in the Manufacturing of Iron and Steel; Machine Tools and Wood-Working Machinery; Wool and Silk Machinery; Pumps and Pumping Engines; Manufacture of Engines and Boilers; Marine Engines and Steam Vessels; and Report on the Ice Industry of the United States.

The first chapter on power for iron and steel has no illustrations. But the next section on machine tools and woodworking machines has 570 engravings covering everything from a sash and door groover head and molding machines to 10 foot plate bender and 84 inch lathe. It's like walking through the most modern metal and/or woodworking shop of the 1880's.

You get page after page of fascinating pumps, ten pages of incredible fire engines, about thirty engravings revealing the silk and wool industry. You get a report on the manufacture of engines and boilers with 32 engravings. You'll see traveling cranes, a pneumatic riveter, Colt's armory engines, an Atlas slide-valve engine, a Corliss engine with a wrought iron frame, a Ball engine, and on and on.

The steam boat section discusses all

kinds of things including engines of New England steamers, engines and boilers of the "City of Augusta", flue-boilers, boilers of Gulf steamers, side-wheel steamers, compound engines of an ocean steamer, engines of Mississippi river steamers, and more. Thirty eight engravings here.

Finally, explore the ice industry back when mechanical refrigeration was just being introduced.

Seeing all these engravings together in one giant volume provides a sweeping picture of American industry more than a century ago. This is a must-have for the antique machinery nut, historian, restorer, collector and builder. Great book at a reasonable price. Other publishers would ask a lot more. It doesn't get any better than this. Order a copy. 8 1/2 x 11 hardcover with extra thick boards reinforced end-sheets about 672 pages

No. 21532

\$49.95

1880 Picture Book of Machine Tools, Woodworking Machines, Engines, Steamboats! More!

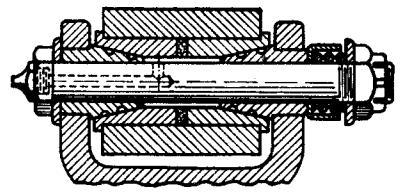


FIG. 155.—Radial and axial play are taken up by the hardened and ground bushings tapered to an included angle of $22\frac{1}{2}$ deg., sufficient to prevent sticking.

Handbook of Mechanical Design

by Nordenholt, Kerr & Sasso
reprinted by Lindsay Publications Inc

You get a 1942 collection of articles from *Product Engineering* magazine including practical design ideas, variations, bits and pieces, hints and tips, basic formulas, and even electrical information for getting the job done.

Chapters include charts and tables; materials; beams and structures; latches, locks and fastenings; springs; power transmission elements and mechanisms; drives and controls; and design data on production methods.

You get charts and nomographs for calculating the length of material needed for 90° bends in pipe or conduit. Or volumes (in gallons) of horizontal round tanks with flat ends. Or for calculating the weight of a certain number cubic inches of brass (or vice versa). And much more.

You can calculate stress on aluminum sheets, compression members, shear members, diagonal tension webs, hollow girders, and more. You'll learn about springs, their natural frequency, design calculations and more.

You get a picture section illustrating various ideas and variations for locking devices, retaining and locking detents, couplings, clutches, gib and guides, bearings, change gears, automatic feed hoppers and more.

Explore drives, controls, types of motors and their characteristics from starting to running under full power. You explore various types of three phase motor windings, and more.

Learn production methods for fusion welding, resistance welding, furnace brazing, flame hardening, centrifugal casting, permanent mold casting, die-casting, forging, flame cutting and powdered metal pressings.

Even if you don't build anything, the "pitchers" are "purdy", and you're sure to learn something no matter what page you open the book to. In other words, this is a fun book to browse through. Get one!

8 1/2 x 11 softcover 277 pages

No. 21540

\$19.95

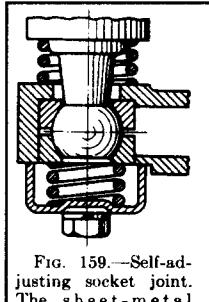
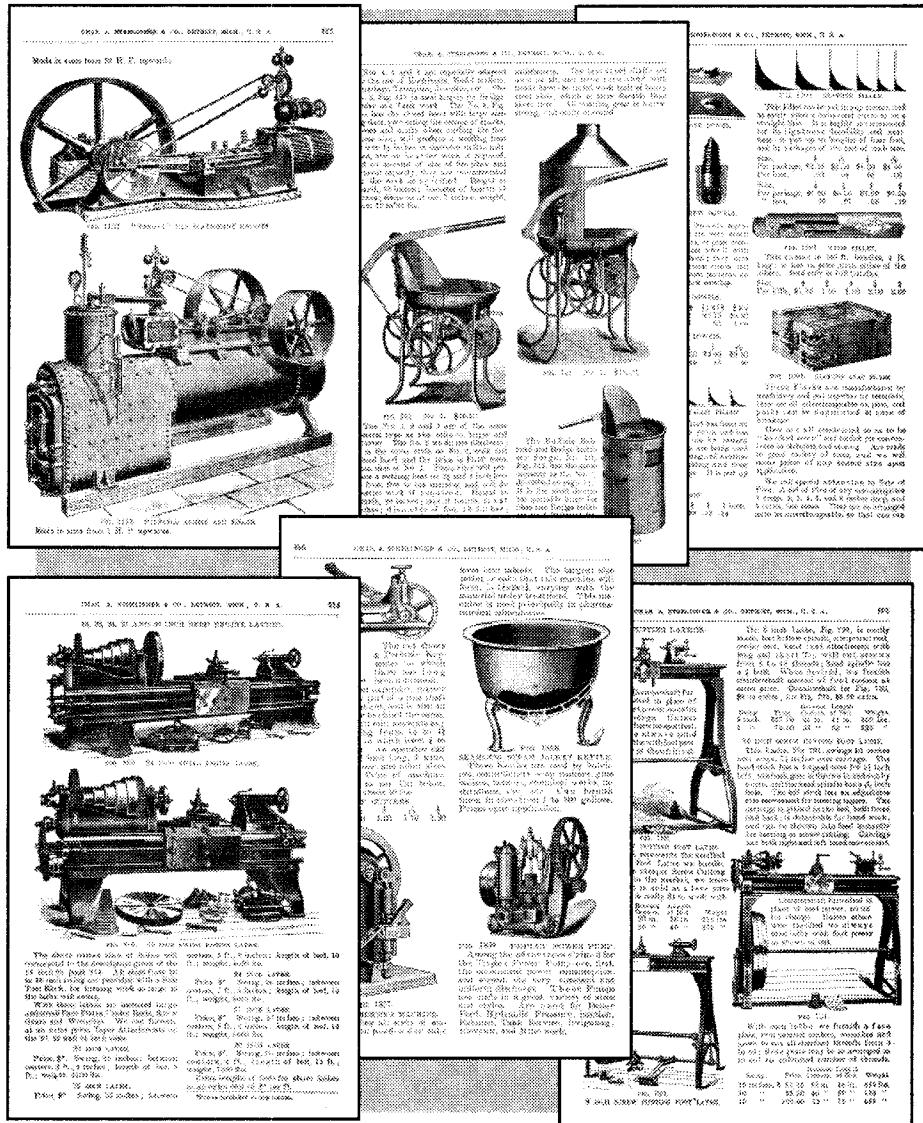


FIG. 159.—Self-adjusting socket joint. The sheet-metal spring cover is held in place by two screws.

1895 Strelinger Catalog A BOOK OF TOOLS, MACHINERY, AND SUPPLIES

by Chas A Strelinger & Co
reprinted by Lindsay Publications

One of the finest tool catalogs you'll ever hope to find in any condition at any price is the classic century-old Strelinger catalog. The originals are not in the best of condition because in the 1890's cheap, poorly manufactured paper was beginning



to flood the market. Over time pages became very brittle.

Here you get a quality reprint of an original loaned to me by a retired curator who maintained machine tools at the Smithsonian. In the years since I originally brought this out, I managed to find my own copy - the only copy I've seen, and it's not in great condition.

You'll discover over five hundred pages of tools with wall-to-wall engravings illustrating everything from pliers to telephones. It's all here: 30" Fifield Lathe, stationary blast forges, Snyders 28-inch drill press, bolt threading and tapping machine, power punch shear, drop hammer with automatic

lifter, Reed engine lathes, 6" B&P shaper, Whiton gear cutting machine, B&S Universal Milling Machine, the 45 hp Tangye Red automatic cut-off steam engine, watchman's clocks, hook and ladder trucks, table presses, hydraulic pumps, and all the usual hand tools, c-clamps, drill bits, cables, brushes, pulleys, and on and on.

This is a comic book for tool fanatics. Use it as a reference for tool collecting, for ideas in building your own machines, or just read it for the fun of it. (And as usual, I'm sure some knucklehead will try ordering the 10 inch treadle lathe for \$85 from this ancient catalog, and wonder why the post office returned his letter. It always happens. Don't know why.)

Pitchers. Lots of pitchers. Neat tools. Fun reading. Nauseating low prices. A lot of book for the money. If you didn't get one a couple of years ago, then get one now.

5 1/2 x 8 1/2 softcover 523+ pages

No. 20692

\$22.95

600 Formulas

Machinery's Shop Receipts

reprinted by Lindsay Publications

On the title page you'll see "Six Hundred Useful Receipts, Compositions and Formulas Selected from MACHINERY'S Columns and Republished in a Classified, Pocketsize Edition, in Response to Repeated Requests from Friends Throughout the Mechanical Field"

This is a complete reprint of the first 1927 edition.

What you'll find here is not really a set of formulas but rather a collection of hints and tips that chosen to make a machinist's work easier and better. Most of the advice is still useful, although some of the alloys mentioned and such may be dated.

This is a great little book loaded with interesting and useful data and you'll find useful. Just one idea can be worth the cost of the entire book. (For that matter, just one great idea can be worth more than the cost of all of the books in this catalog!) Check this out. Consider it carefully. Put it on your list of books to order. Better yet, order it today. 4 1/2 x 6 softcover 266 pages

No. 20374 \$9.95

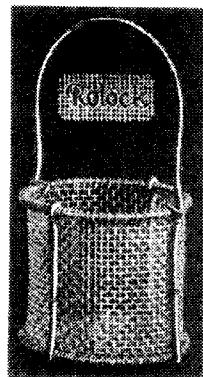
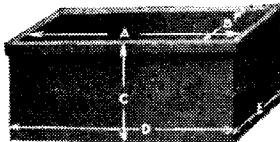
CONTENTS

- Shellac for Pipe Connections •White & Red Lead Mixture •To Cover Pulleys with Rubber
- Cement for Grinder Disks •Cementing Abrasive Cloth to Lapping Wheel •Waterproof Cements for Glass •Cleaning Solution for Brass
- To Remove Hard Grease and Paint •Zinc Chloride Coating Solution •To Blacken Zinc for Laying Out •Silver Finish on Brass •Frosting Brass •Solutions for Brass Heat black Finish •To Bronze Yellow Brass •How to Blue Steel Screws •Gun-metal Finish on Steel •Bronzing Fluid for Steel •To Imitate Casehardening •Lubricant for Thread Cutting •Lubricant for Tapping •Drilling Lubricants
- To Remove Grease from Drawings •Preparing Tracing Cloth for Inking •White Writing Fluid for Blueprints •Mounting Blueprints •Etching Solution for Steel •Animal Glue •Veneer and Joint Glues •To Harden Drills for Cutting Glass •Effect of Quenching Baths •Tempering Solution for High Heats •To Harden Fine Dies •Mixture for Hardening Spiral Springs •Paste for Hardening High-speed Steel •Chasehardening Cold Rolled Steel •Formula for Casehardening •Annealing Steel •To Harden Cast Iron •Graphite as Lubricant •Pickling Castings to Remove Scale •Aluminum Pickling Bath •Brass Polishing Solution •Paste Metal Polish •Rust Preventative •White Lead and Tallow •Solders for Gold •Solders for Copper, Brass and Lead •Fluxes for Soldering •Composition of Aluminum Solder •Solders for Brazing •Cast Iron Brazing •Tinning Cast Iron •Tinning Wash for Brass Work •Copper-plating Cast Iron •Nickel-plating Brass and Copper •Copper-plating •Gold-plating •Black Varnish for Metals •To Mix Lampblack and Shellac •Brilliant Whitewash •To Mend Broken Oilstones •Cutting Plate Glass •To Waterproof Leather •To Fireproof Wood in Shops •Steel Welding Compound •To Weld Spring Steel •Steel Seasing Process •Recharging Permanent Magnets •To Punch Hard Rubber •To Cut Cork •To Cleanse Mercury •Re-inking Time-Clock Ribbons •and much more...

Plater's Guidebook

by Chambers & Hogaboom

Sandwiched in between pages of advertising are industrial details on polishing, buffing, rolling and burnishing, solvent and vapor degreasing, plating solutions, stripping solutions, replen-



ishment, analysis of baths and much more. Includes formulas for plating baths from copper to nickel, chrome and silver. Coloring baths, chromic acid anodizing, and much more. Industrial secrets! Poisonous chemicals! Details from '36. 5 1/2 x 8 1/2 softcover 128 pages

No. 21451 \$7.95

Electroplating

by Henry C. Reetz

reprinted by Lindsay Publications Inc

Try electroplating! It's a useful addition to your shop skills. Here's a simple, inexpensive, well-illustrated little book that will show you exactly what you need to know to get started.

Originally published by Popular Mechanics magazine in

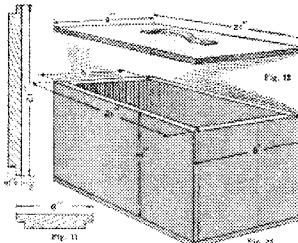
1911. Electroplating is brief, easy-to-read, and useful. You can be sure about that. About the only information that is really dated concerns power supplies.

Chapters include introduction, electrical equipment, shop equipment, cleaning goods before plating, copperplating, nickelplating, silverplating, goldplating, miscellaneous, first aid, and business suggestions.

You'll learn how to clean parts, polish them, mix up solutions, make tanks, and all the essentials to get going. This could very well be an easy to way to try plating. If you enjoy it, then you can launch into "heavier" texts loaded with chemistry and industrial secrets.

A great little book. Worth having. Order a copy. 5 1/2 x 8 1/2 softcover back 99 pages

No. 20080 \$7.95



Finishes for Aluminum

by Reynolds Aluminum
reprinted by Lindsay Publications

This is wall-to-wall, detailed how-to for professional chemical aluminum finishing techniques. Some of it you probably can't use since it uses pre-mixed chemicals like "Alumiprep" and "Kelite Anodyne". But even the directions for use of these cleaners will give you valuable insight into cleaning techniques.



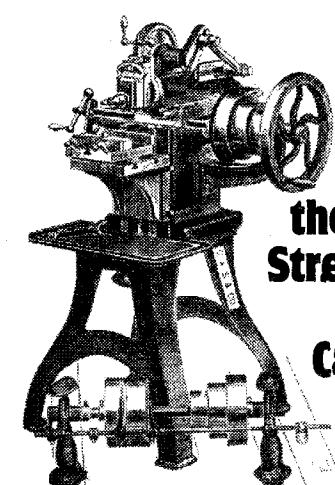
What you can use are five different anodizing methods using oxalic acid, sulfuric acid, phosphoric acid, chromic acid, and sulfamic acid. They will tell you about the tanks you need for cleaning, rinsing, anodizing, dyeing and all the rest. They will tell you that you need

15 to 20 volts with 1 volt regulation at 12-15 amps per square foot. And you'll learn about the steps involved, which dyes to use, precautions, and more. Is it simple? No. Dangerous? Yes! But that's why so few people know how to do it.

You can electroplate brass and bronze, on aluminum as well as steel, iron, copper, etc with the standard cyanide baths described. You can plate silver, copper, chrome (yes, chrome if you can muster 200 amps per square foot), tin, nickel, black nickel, gold, cyanide copper, acid copper, and Rochelle salt copper. You even get a page on spray painting with lacquer.

What you get here is fifty year old chemistry. How-to. Dangerous. Technical. But you get what you need to know - the details that no one seems to want to tell you. If you would like to electroplate and/or anodize aluminum, GET THIS. You need to know what you're up against before you can even make an intelligent decision as to whether its worth pursuing. No pictures. Excellent book. Order a copy. 5 1/2 x 8 1/2 paperback 112 pages

No. 21940 \$9.95



from
the 1895
Strelinger
Tool
Catalog

No. 20692
(elsewhere
in this
catalog)

Making Mechanical Marvels in Wood

by Raymond Levy

You get plans, instructions and illustrations to build a cam and follower, the eccentric, the Scotch yoke, the fast-return actuator, a self-conjugate cam, a stationary steam engine, a single-part mechanism, couplings, Watt's sun-and-planet motion, the Geneva wheel, and several others.

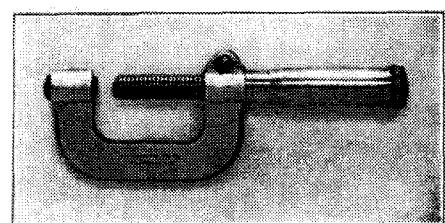
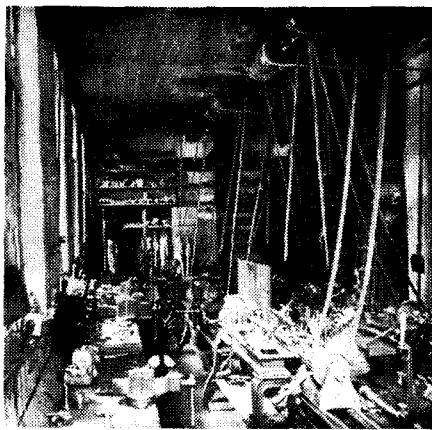
Each is a hard-wood demonstration of a basic mechanical movement that can be quite a conversation piece. How about making these devices from metal?

Fascinating book for anyone who likes machinery. Great ideas for metal workers. A "must-have" for model makers. Order a copy! 8x10 paperback 192 pages

Cat. no. 1306

\$14.95

Making Mechanical Marvels in Wood



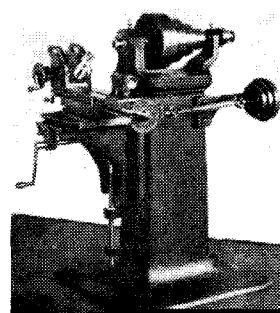
English & American Tool Builders

by Joseph Wickham Roe

reprinted by Lindsay Publications Inc

Meet the men who invented and perfected machine tools. You'll read about and see French lathes from the 1770's,

Wilkinson's boring machine, Samuel Bentham, Brunel and his ship, Maudslay and his screw cutting machine. Discover a French screw cutting lathe



60 Years with Men and Machines

by Fred H. Colvin

reprinted by
Lindsay Publications

"Mr. Machine Shop" was 79 when he wrote this, his final book. He started his machine shop apprenticeship in July 1883 and ended up as editor of *American Machinist* magazine.

Chapters include The Machine That Can



Reproduce Itself, In the Beginning Was the Belt Drive, Giving the Machine a Voice, A Society Sponsors the Machine, High-wheelers and High Iron, Natural History of the Automobile, I Join the American Machinist, From Maxim to the Jet Plane, Machine Tools and the First World War, Tour of the World in

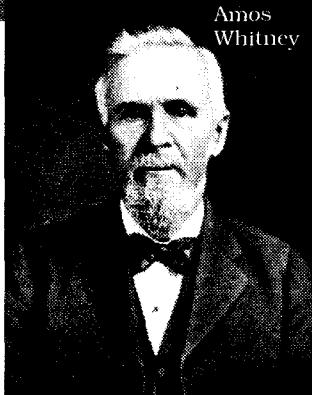
from the 1500's!

Do you really know who Mr. Pratt and Mr. Whitney were? Or Mr. Brown and Mr. Sharpe? Or Colt, Maudslay, or Whitworth?

The answers are here. Meet Joseph Whitworth, Eli Whitney, Blanchard and his gun stocking lathe, Samuel Colt and his armory, Root's chucking lathe, Francis Pratt, Amos Whitney, and others.

If you consider yourself a knowledgeable machinist, you should at least know who these talented people were. After all, they invented the tools you use. Great reading. Entertaining. Get a copy. Top recommendation! 5 1/2 x 8 1/2 softcover 416 pages No. 4732

Amos Whitney

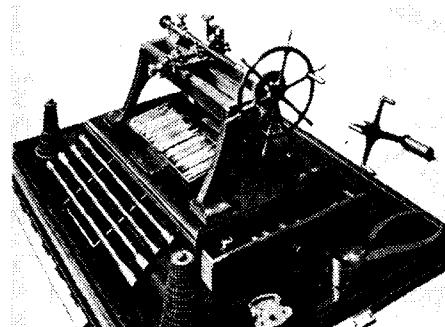


Eighty Days, Machine Tools and Global Warfare, and finally, Past, Present and Future.

You'll find this volume to be filled with personal memories of famous men and incredible machines and how they created the world we know today. Like sitting on your great grandfather's knee and listening to his old machine shop stories. Fun reading. Get a copy. 5 1/2 x 8 1/2 softcover 297 pages

No. 4864

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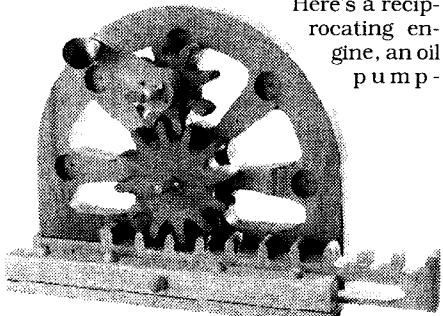


Making Wooden Mechanical Models

by Allan & Gill Bridgewater

What you get are plans and how-to that enables you to build fifteen different mechanisms from wood.

Here's a reciprocating engine, an oil pump -



ing rig, a centrifugal impeller pump, wheel bearing machine, a combustion engine, a cam and fork engine, a flywheel propeller machine, a rack and pinion machine, a pendulum recoil escapement, a flywheel and governor machine, and more.

The materials list calls for beech, cherry, walnut and other quality wood. Skills like laminating, tenon wedging, pegging, and whittling are needed. Building wooden models in itself sounds like fun. But metalworkers should always consider the wooden model as merely a pattern from which a sand mold is fabricated and castings poured. Then a lathe, milling machine and drill press is can be used to assemble the machine. Instead of a linseed oil finish, you might consider polishing the aluminum casting to a mirror finish.

Fire up your gray matter. Interesting book. Excellent illustrations, plans, and above, all ideas. Get one. 8 1/2 x 11 softcover 144 pages 341 illustrations

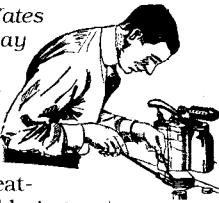
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\$21.99

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Soldering and Brazing

by Raymond Francis Yates
reprinted by Lindsay Publications



This small book is broken into five parts: soft soldering, hard soldering and brazing, brazing, heating devices, and soldering notes.

Within these five sections are numerous topics including electric heater for soldering fluxes, homemade electric soldering copper, method of soldering tin, galvanized iron, zinc, aluminum and lead pipes. You'll learn about blowpipe silver soldering, brazing spelter and much more. This book talks about old ways of joining metal but not about safety. You have to add that.

A neat little book from the 20's. Fun to read even if they are a little dated! Get a copy. You'll like it. 5 1/2 x 8 1/2 paperback 90 pages

No. 20978

\$6.95

507 Mechanical Movements

by Henry T. Brown
reprinted by Lindsay Publications

Originally copyrighted in 1868, this 1893 printing carries a complete title of "Five hundred and seven mechanical movements embracing all those which are most important in dynamics, hydraulics, hydrostatics, pneumatics, steam engines, mill and other gearing, presses, horology, and miscellaneous machinery; and including many movements never before published and several which have only recently come into use."

You'll find each left-hand page carries nine illustrations, and each right-hand page presents brief descriptions of their operation. Some of the movements are trivial, but others

are quite unusual and interesting. In some cases you'll find that these movements were popular at one time, but are no longer used. Discover Fairbairns' bailing-scoop, Anderson's gyroscopic steam engine governor, or Clayton's sliding journal-box.

If you design machines, this can be very useful to you as practical how-to info. Design and build table-top demonstrations of these movements. Great project ideas! At the very least you'll find this a great book to browse through on a rainy afternoon. Very interesting. 6x7 softcover 128 pages

No. 4252

\$7.95

Fire-Arms Manufacture 1880

U.S. Dept Interior, Census Office
reprinted by Lindsay Publications

Mass production in U.S. began almost a century before Henry Ford with the manufacture of rifles, muskets and pistols. Here, you get an illustrated history of the mass production of firearms from 1814 when Col. North started producing interchangeable pistol locks at Middletown, CT to the "recent" improvements of 1880.

You'll find it easy to imagine that you're actually running the Harper's Ferry armory, the Springfield armory, or Colt's factory because you get the details on how many parts a particular machine could produce in a day's time, and how many

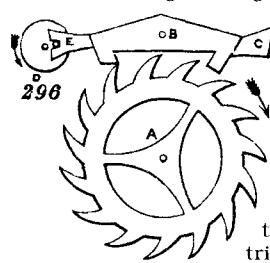
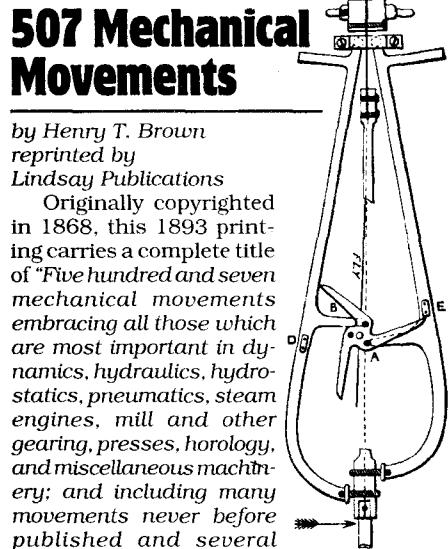
machines one man could run, and so on.

You learn how a 9" billet was bored and then forged into a rifle barrel. You learn about different methods of rifling the barrel. You can image the proving shed where the new barrel was overcharged with powder and tested to see if it would explode. You'll find that cast steel was a rare and novel metal when arms manufacture began, but you'll see it was commonly used by 1880. You'll meet the men whose genius created gun stock duplicating machines. Learn about the details of polishing and finishing. You even get a brief report on ammunition manufacture.

This is a fascinating history of technology written a hundred years ago by people who were a part of the early history. Even Eli Whitney, himself, was interviewed for this report. Interesting book. Low cost. Unusual interesting reading. Great wood cuts. Consider this carefully. 5 1/2 x 8 1/2 softcover 80 pages

No. 20846

\$6.95



296

Thermit Welding!

by Richard N. Hart
reprinted by Lindsay Publications

Thermit! What an incredible process! Take a mixture of powdered aluminum and iron oxide, ignite it, and stand back! Within seconds the mixture flames to twice the temperature of molten steel, and from the bottom of the special crucible comes molten iron. In 1914 Thermit was a cheap and simple way to weld railroad track, axles, and even broken motor shafts.

Learn about the invention of Thermit process, welding rail, special crucible and rail molds, butt welding of pipes, broken locomotive frames, and much more. You get



Cast Iron Welding

by Tin Man (Kent White)

Welding cast iron can be difficult. But if you know the secrets not only can you weld cast, you can do an excellent job.

White talks about having worked and learned at Harrah's auto museum in Reno with Lane Plotner in the early 70's. Plotner had repaired the engine of the only known Bugatti Royale. The engine had a single head, individual cylinders, an aluminum jacket, and an oil pan. A thrown rod had shattered one of the cylinders. Plotner gathered up the pieces from out of the pan and welded the cylinder back together. The engine was reassembled, check for leaks, run for a short time and then shut off. It was an amazing accomplishment.

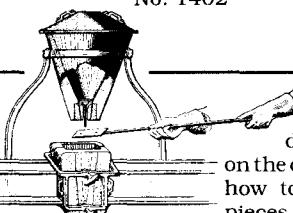
You learn to weld with a torch and with arc on gray iron or ductile, but not white cast (can't be welded), or nodular iron (well documented elsewhere).

As an example White repairs a V12 Lincoln manifold with two cracks. You'll learn how to clamp it down to prevent distortion, make up your own filler rod from old piston rings, grind out the crack, and weld it up. He'll also show you how to do it with commercial rod. Then you'll watch him literally run the hot manifold out to the woodstove to cook it. Proper cooling is essential if you're to avoid the deadly "tink." Watch him arc weld a reproduction Model-A manifold with nickel rod. Learn how to preserve a machined surface while you weld the casting. And more!

About half the tape is done under lenses as he welds and talks. There's much to learn. Let Tin Man teach you. Good tape. Get one. About an hour and a half. VHS NTSC only.

No. 1402

\$39.95

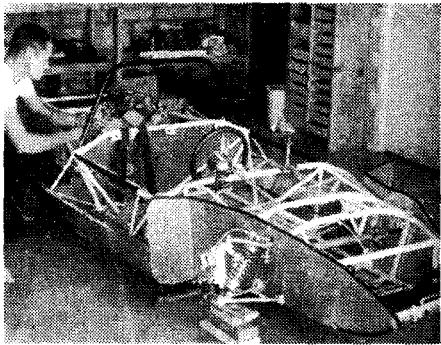


detailed information on the chemistry involved, how to set and preheat pieces, how and why to add nickel or titanium, the use of Thermit in foundry practice, examples of practical welds, including photos of repairs on a torpedo boat rudder, a locomotive frame, even a steamboat paddlewheel axle!

Unusual process! Loads of rare information! Get a copy! 5 1/2 x 8 1/2 booklet 40 pages

No. 899

\$4.25



Performance Welding

by Richard Finch

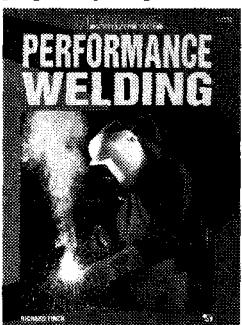
From the backcover:

"Planning to build the ultimate high-end race car chassis? How about complex aircraft structures and engine mounts? If these are your goals, you know that perfect, error-free weld joints are essential in obtaining successful results. Standard welding practices and materials just won't cut it."

Performance Welding is your complete guide to high-quality welding. From selecting equipment to jigging and fitting to welding 4130 steel, stainless steel, aluminum, and magnesium, this book covers it all. Learn all the techniques professionals use in building Indy and NASCAR race cars, experimental aircraft, and custom motorcycles.

Author Richard Finch - a certified welder and welding consultant to NASA tells you everything about high-tech welding. His easy-to-understand text, combined with 230 photographs and tables, makes it easy to achieve perfect welds. If you're serious about welding, here is the most comprehensive information available."

Heavily illustrated. Excellent book. Order one! 8 1/2 x 11 softcover 160 pages No. 1457 \$16.95



Welding Projects

by James A. Ruck

Brand new! (1999) I count 68 different plans in one book! Yes, 68. Everything from a heavy duty engine stand to an ice boat.

The author grew up in Chicago, but the city slicker found out real quick when he took a job as a shop teacher in rural Wisconsin that farmers knew how to fire up a welder and build the equipment they needed. He was impressed by their ingenuity. Apparently over the years he collected plans for useful equipment that his students could build, and in the process learn welding, but could use as well.

Each plan provides a parts list, dimensions for each part and an overall view of how it goes together. You're supposed to know something about welding. This is not for raw beginners. But it's not that difficult either. Remember Ruck teaches high school students. So YOU can build almost anything in here.

You'll be fabricating this equipment from rounds, squares, tubing, square tubing, black pipe, angles, flats, channel, sheets and plate. A few projects may require special equipment such as a lathe or milling machine. Most will require the usual sawing, filing, and maybe a sheet metal brake, and so on.

So build yourself a weight lifting bench, and start removing your beer gut. Or build the lawn cart and use it to clean all the garbage out of your garage so you can get the car in (or better yet, a new lathe in).

Loaded with valuable plans. Worth twice the price. 8 1/2 x 11 softcover 96 pages No. 1483 \$17.95

68 Different Plans!

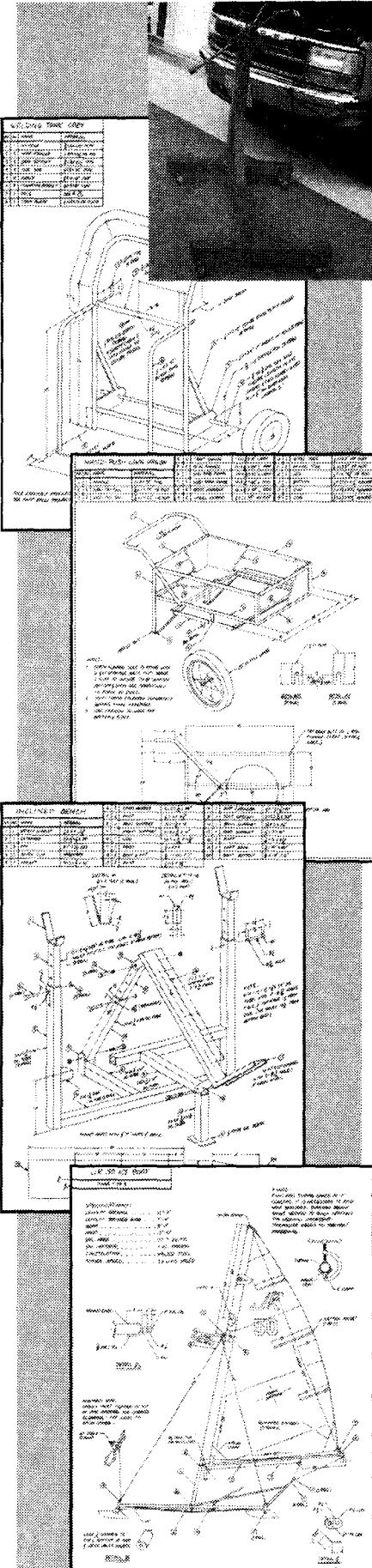
baseball backstop • basketball backboard stand • snow ski rack • water ski/wakeboard trick trainer • snowmobile dolly • snowmobile stand • bear paw style snowshoe • canadian style snowshoe • JR 50 ice boat • deer hunting tree stand • deer dolly • parallel bars • skateboard rail slide • boat anchor • soccer goal • push-up bars • butterfly bench • sit-up bench • curling bench • weightlifting bench • inclined bench • lat machine • squat rack • stair stepper • dip press/leg lift • chin-up bar • weight storage tree • dead lift bar • shop dolly • welding tank cart • shop tool cart • portable welding curtain • fold-up miter saw table • saw table extension roller • drywall stilts • trailer dolly • portable vise stand • engine stand • hydraulic engine lift • engine dolly • hydraulic bearing press • lifting gantry (chain hoist) • frame-mounted receiver hitch • hitch-mounted carrier • adjustable height hitch • pickup truck carrying rack • motorcycle repair stand • car ramp • jack stand • pickup truck door step • drafting table • computer table • guitar stand • music stand • electric piano stand • amplifier stand • christmas tree stand • can crusher • baker's rack • corner baker's rack • four-shelf plant stand • log storage rack • hand-push lawn wagon • e-z tilt lawn cart • flagpole with in-ground base • pumping-style windmill • weather vane • clothes pole tree

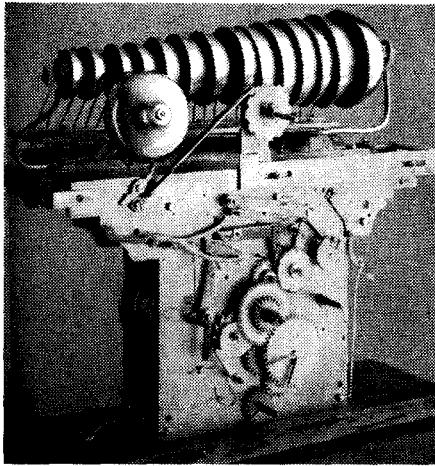
CONTENTS

MIG, TIG and Oxyacetylene Welding

Processes • Shopping for Welding Equipment • Fitting and Cleaning Metal • Jigging • TIG Welding Steel and Stainless Steel • TIG Welding Aluminum and Magnesium • MIG Welding Steel and Stainless Steel.

MIG Welding Aluminum and Magnesium • Gas Welding Steel and Stainless Steel • Gas Welding Aluminum • Welding Shop Safety • Welding Supplies • Sources for Metals • Shop Math • Glossary of Welding Terms





Striking and Chiming Clocks

Their Working and Repair

by Eric Smith

"...Striking and chiming clocks are a common enough sight in homes....

A growing number of enthusiasts are keen to learn about the repair and restoration of these beautiful pieces, and it is to them that this much-needed workshop manual is addressed..."

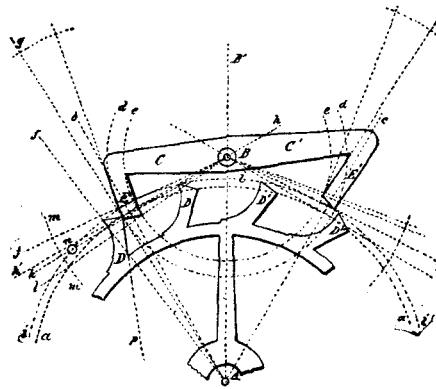
Expert clock-repairer Eric Smith offers detailed notes on the principal mechanisms involved, along with plenty of practical advice which both amateur and professional restorers will find invaluable. He focuses in particular on the all-important sounding systems, aware that a full understanding here will help to improve efficient handling of the other mechanisms. His comprehensive instruction also explains repair and setting up, and outlines the common variations amongst models. Throughout, the author concentrates on the medium-priced and inexpensive clocks which are most likely to turn up for repair..."

Chapters include elements of sounding mechanisms, striking and chiming gear trains, countwheel striking, rack striking, countwheel chiming, rack chiming, repair of individual parts, setting up and adjusting, correcting faults, and appendix.

You can make a clock that keeps some semblance of time from a plank and a pocket knife. When you start looking at more precise time pieces, you discover fascinating machines. When you move into the world of chronometers and chiming clocks, you move into the arena of incredible mechanisms. This book is about the latter. Nicely illustrated. Excellent book. From England. Worth having. 6 1/2 x 10 hardcover 192 pages

No. 1405

\$24.95



Watch and Clock Escapements

from *The Keystone Magazine*
reprinted by Lindsay Publications

"A complete study in theory and practice of the lever cylinder and chronometer escapements, together with a brief account of the origin and evolution of the escapement in horology."

Back at the turn of the last century horologists (watch-makers) were so impressed with a series of articles that appeared in *The Keystone*, they begged the editors to reprint them as a book. The three original articles together with two new chapters illustrated with almost 200 drawings were released in 1904.

Here you get: the detached lever escapement, the cylinder escapement, the chronometer escapement, history of escapements and putting in a new cylinder.

What makes this book so great is that it is all "meat". Here are secrets, hints & tips and warnings from people who were building clocks and watches for people doing the same. Get yourself a straight edge and compass and learn how to layout escape-wheel teeth in nitty-gritty detail. Or learn how to make your own drawing instruments. Or delineate (layout) circular pallets. Or a club-tooth lever with equidistant locking faces. Learn how to set a jewel pin properly. How to identify a quality setter. Or how to make and use a device to measure angular motion in your wheels.

Within each section are fascinating details on how to make an escapement matching tool, drawing a cylinder escapement and making a working model, secrets of detent springs and tangential locking in chronometers, and more.

You are not shown how to build a clock. You're expected to know how to do that. This is about the secrets that go beyond the basics. Things you need to know to make quality timepieces.

One of the best horology books I've stumbled across. My type of book: complex but practical. Excellent. Get a copy. 5 1/2 x 8 1/2 paperback 179 pages

No. 21907

\$12.95

Small Woodworking Projects

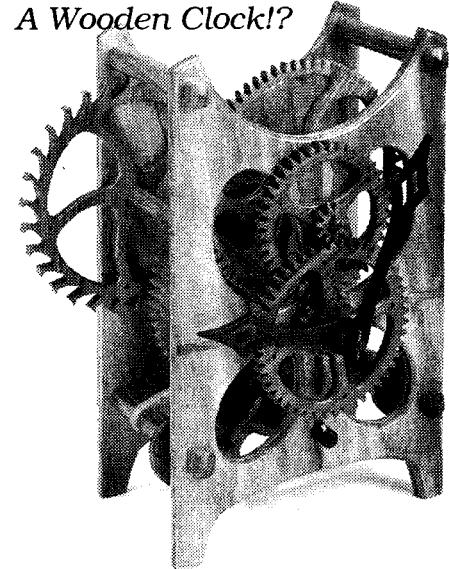
The Best of Fine Wood Working Magazine

Woodworking in a metal catalog? Yup. Aah seeeen this wooden clock on the cover and the incredible color plans inside and thought this would make a great project... especially when done in metal. In fact the clock gears are shown being milled from wood on a metal lathe.

It looks like a neat clock with seven gear-wheels, the largest 6 13/16" in diameter, with a 3' pendulum. It supposed to keeps time to within a few seconds per day.

And there are other small projects that you can make from wood and perhaps some (with imagination) from metal. Make a fireplace bellows for your foundry. Make a walnut lap desk, river whistles and cane flutes, boxes from burls,

A Wooden Clock!?



wooden spoons, wooden shoes, bowls, pepper mills, a pool cue, jigsaw puzzles and even a sliding top box for your nitroglycerine, tranquilizers, snuff or illicit Cuban cigars. And more.

You'll learn how to laminate wood to produce beautiful turnings, bend wood to make snowshoes, make toy trucks and marble chase games, and more. (My first love is the clock.)

Great projects. Lots of color, plans, and fun. Well worth the price. Get a copy, and get going. 9x12 softcover 127 pages

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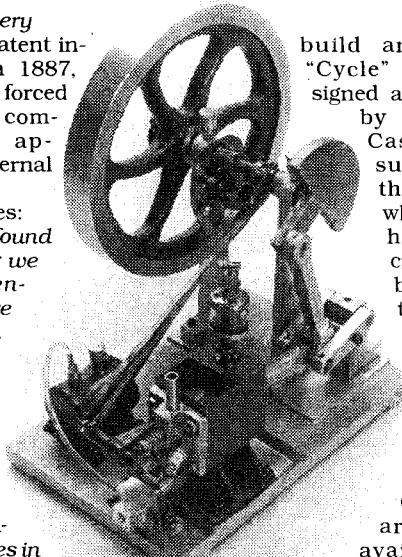
Building the Atkinson "Cycle" Engine

by Vince Gingery

To avoid patent infringement in 1887, Atkinson was forced to create a completely new approach to internal combustion.

Vince writes:

"We have found that wherever we show this engine, people are amazed... They ask... Where are the timing gears? What about a separate cam shaft? How does it run? How can it complete four cycles in a single revolution of the crankshaft? Are you sure it's not a two cycle engine?"



build an Atkinson "Cycle" engine designed and perfected by Jim Lewis. Castings are suggested for the base, flywheel, cylinder head and crank linkage, but none of these parts are so complex that they could not be made from stock material.

Other parts are readily available, and suppliers names and addresses are provided to make it even easier.

All Four Cycles in One Revolution of the Crank!

We smile and explain that the secret lies in the unusual design of the crank linkage which, believe it or not, allows the exhaust, intake, compression and power strokes to be completed in one revolution of the crankshaft. The cams are located on the crankshaft eliminating the need for timing gears and cam shaft."

Here you get step-by-step instructions showing how to

Alathe, milling machine or milling attachment and other tools one would expect to need in a project of this type are required.

You get the typical Gingery detailed drawings and text for making the patterns, machining the castings, and assembling the engine. I saw the prototype run. Interesting engine, to say the least. Build one!

8 1/2 x 11 softcover 94 pages
No. 1400 \$15.95

TECHNICAL DETAILS

The flywheel is an aluminum casting and weighs about 3 pounds. Its finished diameter is 8 3/4". The 7/16" crankshaft is held in place by two aluminum cast support pillars. The ignition points and condenser are from a late 1970's Ford V-8 engine.... An ignition cam mounted on the crankshaft opens and closes the points. The intake and exhaust cams are also mounted on the crankshaft.... The crankshaft bushings are lubricated by grease cups.

The drive linkage consists of the crank throw, the connecting rod, the piston rod, the pivot post and the pivot arms. The crank throw is made from 3/8" H.R.S. and is brazed to the end of the crankshaft.... The connecting rod is an aluminum casting and it pivots from the end of the crank.... The pivot arms are made from aluminum bar stock. The pivot bushing is lubricated with a grease cup and the piston rod is lubricated with oil by means of oil holes at the piston connection and the crank connection.

The piston measures 1 1/4" in diameter and is made from 1 3/8" aluminum round stock. The piston rings used are 1 1/4" and are made

from cast iron. The cylinder is made from 1 1/2" cast iron round stock. A water jacket is built around the cylinder and is constructed of 1/8" sheet steel. The water jacket is filled with antifreeze and helps keep the engine cool.

The cylinder head is an aluminum casting and is bolted to the end of the water jacket. It is drilled and tapped for a spark plug, valves, carburetor and exhaust.

The carburetor design is similar to those used on model airplanes and boats. The fuel flow is controlled independently by an adjustable needle valve. The air intake is controlled by an adjustable throttle barrel. The two are tied together so that when the throttle is opened the needle valve also opens slightly letting in more fuel for increased speed. The idle air mixture is also adjustable.

The gas tank is made from a short length of 2" diameter exhaust pipe... We use the same type of fuel to power the engine as is used in lanterns and camp stoves.

All of the components of the engine are mounted on a cast aluminum base measuring 10 5/8" x 7 1/8"....

The Stirling Engine Manual

by James G. Rizzo

Wow! No other way to say it. Just plain, wow!

Rizzo's book "Modelling Stirling and Hot Air Engines" appeared in England in 1985. This is a newly formatted updated version of his original title.

He says: "It is still a book for beginners to the hobby of building Stirling Engines..."

The first part of the book covers the history of the engine....

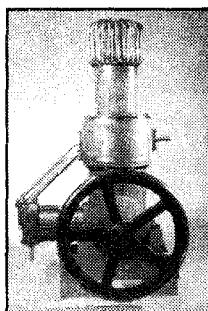
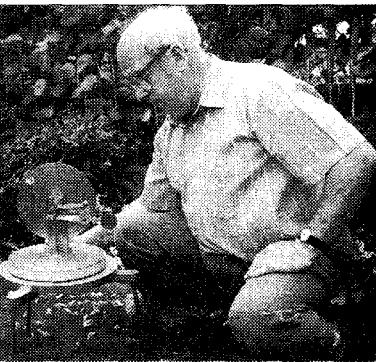
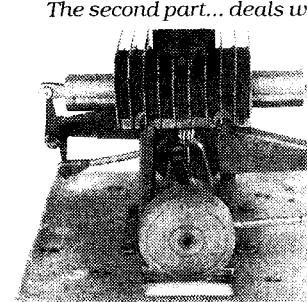
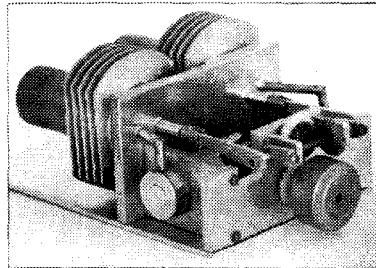
The second part... deals with projects well within the capabilities of the beginner or a home engineer with modest workshop facilities. This section covers a range of examples from small, uncomplicated but highly instructive and entertaining engines, to two types of Stirling engines not previously covered, a Low Temperature Differential Stirling Engine, and a Pressurised Stirling Engine...

[I believe] this is an engine that still has scope for further development; secondly that the home engineer has much to offer in its development... thirdly, this need not be an expensive hobby, since a fair amount of materials used can be obtained cheaply or from scrap yards..."

Many people contributed to the contents of this book including Andy Ross, James Senft, Roy Darlington, Richard White, and a number of others.

You get detailed text and great illustrations. You don't get dimensioned plans, but you do get photos, side elevation drawings, front elevations, tables of all important dimensions and specifications, and more. I've not seen more practical nuts-and-bolts hands-on how-to on Stirling engines in one place before. This beauty comes from England and because of exchange rates, prices are a bit high and can vary. But you get a beautiful hardcover book loaded with rare info. It's worth having. All I can say is Wow!

8 x 11-1/2 hardcover 183 pages wall-to-wall illustrations and four pages of color photos
No. 1375 \$35.95



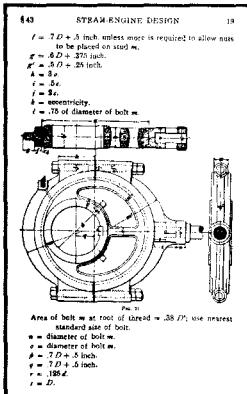
CONTENTS

What is a Stirling Cycle engine? • How the "Closed Cycle" Hot Air Engine works • The Regenerator • Heating and Cooling • Pressurisation • Designing and Building model Stirling engines • Workshop Practice • Starting and Running an engine • Of Models and Modelling • How to Construct "Dolly" I • How to Construct "Dolly II" • How to Construct "DOP-YU", a double acting Stirling Engine • How to Construct "Lolly" • How to Construct "Lolly II", a V-type engine • How to Construct "Sturdy" • How to Construct "Mariner", a twin cylinder Stirling engine • The Ericsson Hot Air Pumping engines • How to Construct "Prova II", a competition type co-axial Stirling engine • How to Construct "Sunspot", a solar-powered Stirling engine • How to Construct "Dyna", a demonstration engine • Low Temperature Differential & Ringbom Stirling engines • How to Construct "Tuba" • How to Measure Performance

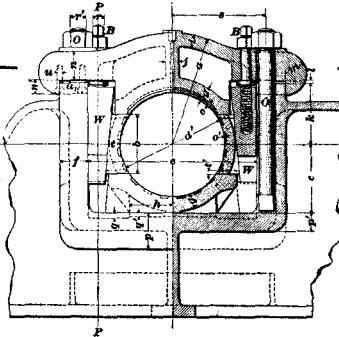
Steam Engine Design

reprinted by Lindsay Publications

Learn how to design a steam engine from an 1896 engineer.



You'll learn the basics: all the components, how they fit together, and how they work. Then you'll learn about the choices and tradeoffs that must be made concerning expansion, valving, boiler pressure, piston speeds and more. Then you start plugging numbers into the formulas to come up with back pressure and point of



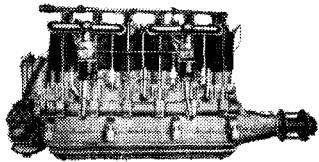
exhaust closure for simple engines and engines with single swinging eccentrics.

Investigate simple, non-condensing engines, high speed automatic cutoff engines, hoisting and locomotive engines, and multiple-expansion engines. Calculate in detail the proportions of the cylinders, steam ports and passages, dimensions of the steam chest and more.

You will learn secrets and techniques that haven't been taught in almost a century. Loaded with incredible design detail. Reasonably priced. Order a copy!

5 1/2 x 8 1/2 softcover 192 pages
No. 4104

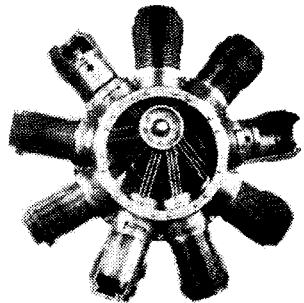
\$9.95



Air Board Technical Notes

reprinted by Camden Miniature Steam

Air Board Tech Notes? Wah? This was published in 1917 to keep Britain's Royal Flying Corps and the Royal Naval Air Service in the air. These two flying circuses, by the way, later combined to become the Royal Air Force. This is the engine manual that technicians, not repairmen, used to help them keep the engines running.



Steam Airplane & Small Power Boilers

from Model Engineer 1913

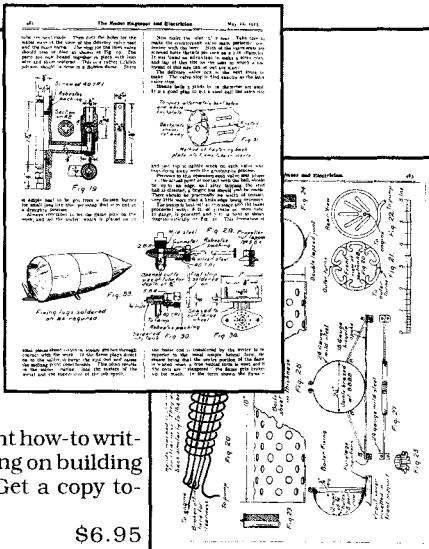
Build a steam power plant for your model airplane! That author claims the engine is the most difficult part to fabricate but is not beyond the abilities of the average modelmaker. The cylinder is of German silver tube, with a steel crankcase that has been carefully brazed. He'll tell you how to fabricate the cylinder, rings, rotary valve and all the rest. When complete, the engine weighs less than 5 ounces. The flash steam boiler is fabricated from 8 feet of 3/16th steel tube. You get drawings and details. The author claims flights of over a quarter of a mile!

The back half of this booklet is a general lengthy article on the design of small boilers, feedwater pumps, materials to be used, details on safety valves, alcohol burners, much more.

Nitty-gritty power plant how-to written by people who did it. Nothing on building the airplane. Great reading. Get a copy to-

day! 8 1/2 x 11 booklet 39 pages

No. 876



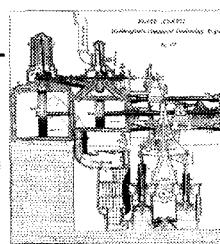
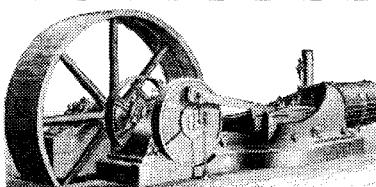
\$6.95

Modern Steam Engines

by Joshua Rose, ME

reprinted by Lindsay Publications

This large format book contains twelve untitled chapters that include such topics as cylinder ports, cushioning and its effect, the effect of rock-shaft upon the action of a common slide-valve, crankpin and piston movements, diagram of valve motion, when a slotted crosshead is used instead of a crank, Stephenson's link motion, the link in mid-gear: action of the parts, increase of lead due to moving the link from full gear towards mid-gear when a rockshaft is employed, the adjustable cutoff engine, Porter-Allen engine, uniformity of flywheel velocity, action of the auxiliary springs in the Buckeye Governor, construction of the Dexter governor, the Reynolds Corliss Engine, the dashpot of the Wheelock engine, Farcot's compound engine, the condensing engine, the Bulkley independent condenser, the vertical compound condensing engine, the marine engine, principles of construction of the Joy valve gear, the Frick traction engine, the rotary engine, the Ingersoll



rock drill, the Worthington steam pump and much, much more.

Remember! Rose was a stellar engineer of his day, and this book was intended to teach the mysterious details about engines that you couldn't pick up on the job. About half the book is dedicated to valves, to their gear, and to adjustment.

Many of the "four hundred and twenty-two engravings" illustrated deal with valves and valve gear, but the rest will show you stationary, marine and traction engines in use in 1887, their internals and their auxiliary equipment. Beautiful engravings. Rare book! Back in print! Consider it. 8 1/2 x 11 softcover 322 pages
No. 21214

\$26.95

You get a brief few pages on engines in general followed by in-depth examinations of the 90Hp RAF 1a (an air cooled V8), the 120Hp Beardmore (a 6 cylinder inline), the 80Hp Gnome engine (a 7 cylinder rotary air cooled), and three 9 cylinder air cooled engines: the 100Hp Monosoupape, the 80Hp LeRhone, and the 110Hp Clerget.

You get great photos and technical details on the engines, fuel pumps, lubrication pumps, bearing arrangements, and other practical details. It's a small, somewhat expensive reprint, but certainly a quality one. So get a copy of this. Lay a ladder across a couple of cardboard boxes in the backyard, put on goggles and a long scarf, and tell the neighbors you're a World War I ace. (Then run like hell when the guys with the straight-jacket show up...) 4 1/2 x 7 softcover approx 128 pp
No. 1447

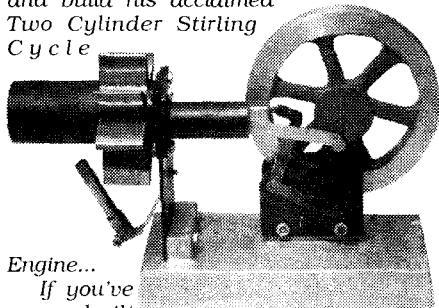
\$13.95

Building the Haynes Hot Air Engine

by Vince Gingery

From the backcover:

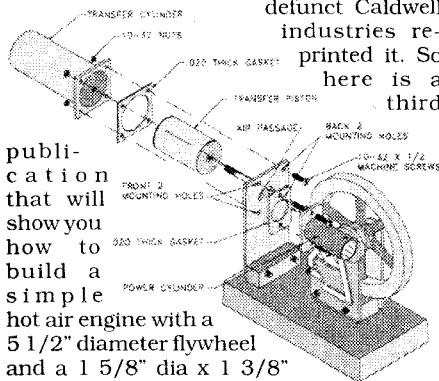
"This Haynes engine is only one of several unusual engines built in the last few years by my father, David J Gingery. This is the little engine that inspired him to develop and build his acclaimed Two Cylinder Stirling Cycle Engine."



Engine...

If you've never built an engine before, this is the place to start. The engine is simple, and only a small lathe and common handtools are needed to create a machine you'll be proud of. This is a great first project and an exciting adventure for the novice machinist."

Here you get detailed instructions on building a Stirling engine, this particular design having been originally perfected by T. E. Haynes whose manual was published in Great Britain in 1967. In 1978 the now-defunct Caldwell industries reprinted it. So here is a third



publication that will show you how to build a simple hot air engine with a 5 1/2" diameter flywheel and a 1 5/8" dia x 1 3/8" stroke transfer cylinder.

Castings are used, but you could get by with weldments. (But I think you're a

damned fool if you don't build a simple furnace and pour a couple of castings out in the alley. It's low-cost and easy.) Since this was

originally a project for school shop classes, the skills and tools needed are minimal. A lathe with at least a 6" swing is required as is a drill press. You'll need to braze and silver solder, so you'll need something more than a propane torch. A mapp gas torch should do. In other words, this is certainly an engine you can build.

In the meantime get a copy of this and get started. The usual top-rate Gingery quality. 8 1/2 x 11 paperback 46 pages No. 1460 \$12.95

Build a Two Cylinder Stirling Cycle Engine

by Dave Gingery

Dave Gingery's letters tell most of the story:

"Here are a couple of sketches of the new hot-air engine project... I've built a single cylinder engine of a similar design and it runs great. Practically no sound or vibration at about 1200 rpm... It is a great training project that should be appropriate for second and third year shop students....

This is a free-style design with no practical application except as a demonstration engine. However, it is not a toy engine, and the builder will gain some valuable additions to his tooling as well as acquire new skills...

A lum in u m castings are a major portion and the remainder is made of common water pipe, drill rod, brass rod and ordinary hardware, fittings and sheet metal. A small lathe fitted with faceplate, chucks and ordinary tooling will do the work. You will greatly expand your skill and you will end up with a mechanical marvel..."

Dave stopped by one time and fired up

You can watch this engine "run" on the Lindsay website.

his prototype engine. From the outside ends of the opposing cylinders the engine is

11 1/2" long. When he fired up the alcohol burners, the engine sat there on my desk and silently started

spinning. It was really something to see.

This is an external combustion engine but it does not use steam to carry the heat energy into the cylinders. Instead, it uses hot air. The engine was perfected by Rev. Robert Stirling in the early 1800's. John Ericsson, the Swedish-born engineer contributed substantial improvements to the engine.

"I've killed a disgusting number of hours watching it run."

This is the usual full-tilt Dave Gingery manual with all necessary illustrations and step-by-step how-to that has made his name a famous one among machine shop enthusiasts. (Engines have been built without using castings.) You get history, theory, drawings, photos, the whole thing. Another Gingery book! A "must have!" Order a copy today! 8 1/2 x 11 softcover 76 pages No. 1302 \$10.95

Model Engine Construction

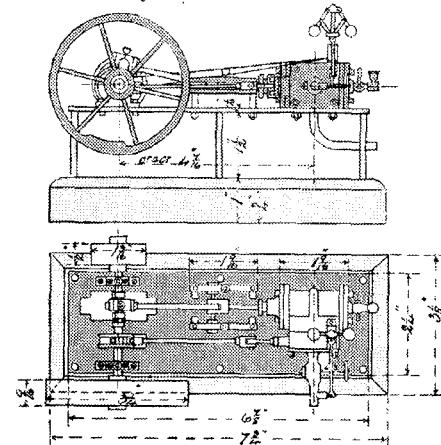
by J. Alexander

reprinted by Lindsay Publications

If you're looking for projects to build, you'll enjoy this reprint. Originally published simultaneously in London and New York in 1894, this unusual book contains thirteen chapters: tools, boilers and fittings, the steam engine, fitting up the engine, reversing gears, stationary engines, traction and portable engines, locomotive engines and tenders, railway cars, compound marine engines, engine proportions, patterns and castings, and the last chapter covers a hot-air engine, small power engine, and notes. The illustrations from the 25 large and crumpling foldout plan sheets glued into the back of the original book have been reprinted on pages following the text.

You can build for instance, a beam engine with a 5/8" bore and 7/8" stroke with a 3 1/2" flywheel. The plans for the traction engine locomotive, marine engine, and the rest are of comparable size.

You must realize, of course, that each project could be a whole book rather than a chapter as it is here. The plans are fairly detailed but not quite to the degree you see in modern model magazines. Many of these models are based on castings which are not commercially available.



Despite these shortcomings, there is a wealth of information and ideas for the guy with a lathe itching to build a working model, particularly a live steam model. A bit on the expensive side, but it's a big book and it delivers hard-to-find info. The original was so brittle we had a devil of a time reprinting it. 5 1/2 x 8 1/2 softcover 360 pages loaded with illustrations. Order a copy.

No. 4449

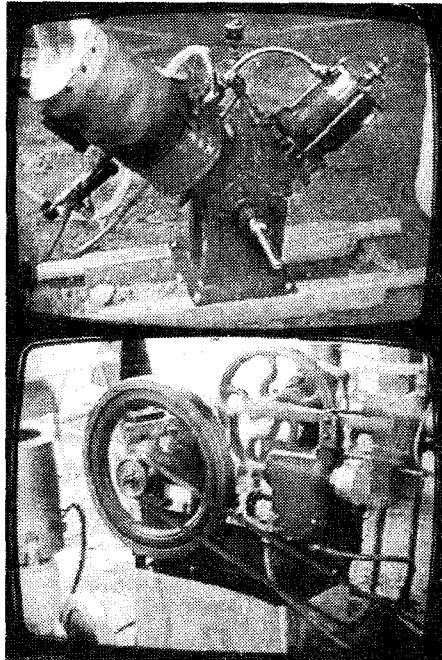
\$15.95

An Introduction to Hot Air Engines

by Bob Bailey

Ooh! Ahh! What a video! You'll see one hot air engine after another. And almost every one is running full tilt.

You'll see old engines like Stirling fan engines, Rider engines, Ericsson pumping engines. Bremen Silent engines (only 16 known to exist), a very rare 1902 Slocom, and many more. It's one engine after another - on and on and on.



Just about the time you think the tape is over, Bailey takes you to Andy Ross's shop to see his 20cc gamma engine and a 90cc Stirling engine with magnetic coupling. These engines (some patented) can be seen in his book. But you MUST see them run. And you have to see the engine parts lying around Andy's shop. Amazing!

Visit with Ron Steele. He'll fire up a four cylinder engine and run it at 800 rpm at 800° F. Then he jacks up the temperature to 2000° F with a torch. That gives about 1500 rpm. When he pressurizes the engine with 20 psi, you have got to see what happens! He even takes the engine apart to show you what's inside.

Bailey will take you to the big engine meets at Wyandotte MI and Lake Itasca MN to see incredible hot air engines, some restored, some models, and others of unique design. See a running liquid piston engine built by Neal James. See Ken McCabe's engine built from an auto air conditioning compressor. See some fantastic engines built by Ole Berge. And on and on it goes.

If you like engines, get this. If you want to feel like a raw beginner (no matter how skilled a machinist you are), get this. If you think hot air engines are wimpy, GET THIS!

Great stuff. About 80 minutes of wall-to-wall engines. VHS, NTSC format only. Get a copy. You won't be disappointed. Excellent! No. 1396 \$33.95

An Introduction to Stirling Engines

by James R. Senft

You get a simple but accurate explanation of how Stirling engines work, why they work, and simplified theory surrounding their operation. If you're going to design and build, or simply modify, a Stirling engine, you need this theory. And a little theory goes a long, long way toward improving chances for success.

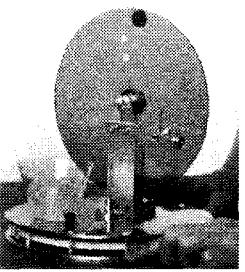
You'll learn about heat engines, heat engines and laws of thermodynamics, efficiency and the second law, the displacer, the Stirling thermodynamic cycle, a complete Stirling engine, other engine mechanisms, heat losses, the regenerator, the single-cylinder configuration, the ideal Stirling cycle, two-piston Stirling engines, pressurization, modern development, and

a bibliography.

You get lots of old engravings of engines (many are to be found in Lindsay books), but you also get to see amazing new engines, the L-27 Ringborn solar engine, the P-19 Stirling engine that runs on the warmth of a human hand, engines that pump water, run automobiles, and more.

Small book. Great info. Well written. Great ideas for engines, and other engine sources. 1993. Get a copy. 5-1/2 x 8 softcover 80 pages No. 1374

\$11.95

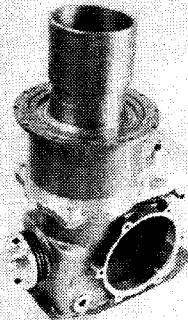


Making Stirling Engines

by Andy Ross

As you know, a Stirling engine is an external combustion engine invented in 1816 that uses air instead of steam to transfer heat energy. Engines have been built that have been powered by no more than heat of a man's hand, or conversely, by the lack of heat from a glass of ice water.

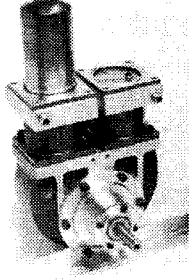
Ross's book is a great text that Stirling engine buffs will tell you is a "must have." You get an introduction to the engine, a brief history, how it works, Andy's beginnings in engine construction, and more. Headings from the book include: other rhombics, the yoke drive, diversions, renaissance of the yoke drive, model airplane fever, the D-90 engine, and complete specs on six of his engines.



You'll see photos of the incredibly beautiful engines he has built: the 300cc DOE rhombic, the 15cc alpha with yoke drive, 35cc yoke Rider engine, the V-15 engine, the C-60, the V-90, the D-90 driving a mountain bicycle, the D-90 test rig for use as an outboard motor and others.

What you get here is a lengthy report revealing the experiments of an expert machinist and engineer. You get text loaded with technical details, and many, many views of his engines. But no detailed plans or how-to.

Small, top quality, and definitely worth having! Get one. 8-1/2 x 11 with plastic spiral binding. 60 pages heavily illustrated No. 1373



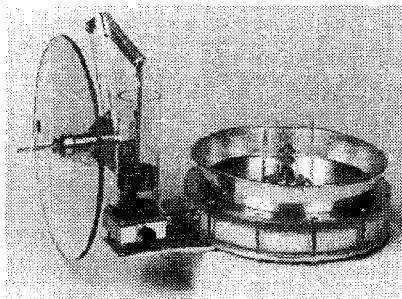
\$14.95

Low Temperature Differential Stirling Engines

by James R. Senft

A new low delta T engine book! Engineers use the Greek letter delta, D, to mean "difference" or "change in." A low delta T is short hand to mean a small difference in T, or temperature. These are engines designed to run on low-grade heat. In fact some of these engines will run on the heat given off by your hand, your television or your favorite political candidate.

The author writes, "Much of my recent university research has been in this area, and this book tells the story of the origin, development, theory, and operation of these engines in terms anyone can understand. The book also covers the construction of



these engines including complete plans and instructions for building a model engine which will run truly effortlessly when held in your warm hand."

This is another book from Doc Senft, the guru of Stirling engines. Another must have book for the engine nut. (So get out your check book...) Here's your chance to build an engine that will amaze your engine-ignorant neighbors and relatives. Tell them it's magic or perpetual machine. They won't have a clue. They'll think you're a genius. (And I sure won't tell 'em otherwise, now will I?) Get a copy! 5 1/2 x 8 softcover 88 pages No. 1408

\$12.95

Hot Air Engine Patents

compiled by Lindsay Publications

You get seventeen complete hot-air engine patents granted from 1871 through 1959. You get classics like the A K Rider patent from 1871 and J Ericsson's patent from 1880. But there are others, totally new to me, that bear examination. How about the four cylinder beam engine of Woodbury, Merrill, Patten and Woodbury from 1880? Or the Eimecke double-acting engine from 1883? The huge Willcox four-cylinder engine from 1883 is actually mounted atop two brick ovens that power it.

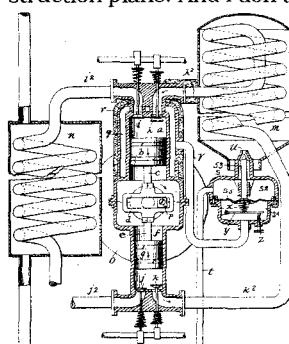
The Stoddard patent of 1919 claims that his hot-air engine is so compact and powerful that it can be used to power an automobile (at least of that era...). Smith's heat engine from 1930 is another impressive four cylinder machine. And check out Meyer's 1959

patent with the rhombic drive.

Be warned that some of these patents are hard to read. They look like "blow backs", that is, enlargements from microfilms of poor photocopies. The drawings are in good shape, but some of the copy is difficult to read.

These are not construction plans. And I don't know where to get any. This is for the engine nut who wants historical background, wants to develop an unusual engine to exhibit, or wants something more interesting than television for entertainment. Inexpensive. Surprisingly fun!

Get one. 8 1/2 x 11 softcover 93 pages
No. 21958 \$9.95



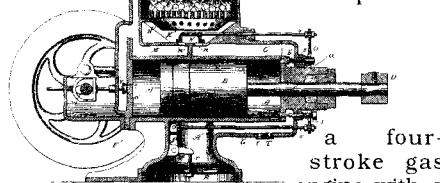
Get one. 8 1/2 x 11 softcover 93 pages
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IC Engine Patents 1

U.S. Patent Office
reprinted by
Lindsay Publications

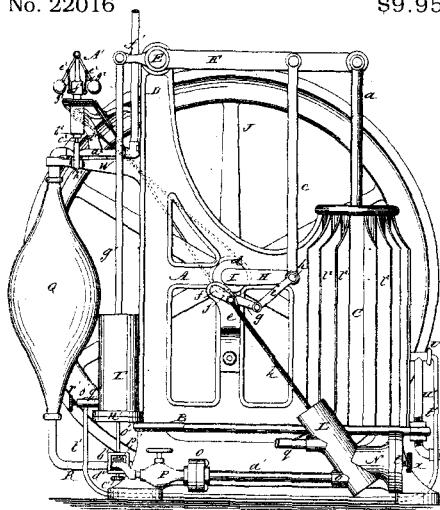
Fourteen unusual patents from 1881 through 1890 that were chosen on the basis of their uniqueness. You get details Ravel's Oscillating Gas motor, AK Rider's gas engine, Hopkin's 1883 beam gas engine, Hiram Maxim's unusual vertical gas motor from 1884, the monstrous Hibbard rotary gas engine and more.

Included are all three James Atkinson patents. You get his original 1884 patent of



slide valve. You get his unusual 1886 opposed piston design with its unusual linkage that Dave Gingery is building. And there is, of course, the classic 1887 design already built by Lewis and Gingery that allows four strokes on one revolution of the flywheel.

You get the complete patents with all text and all drawings. Fascinating engines! Get a copy. 8 1/2 x 11 softcover 95 pages
No. 22016 \$9.95



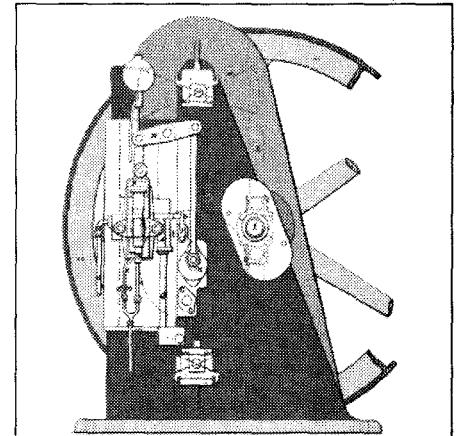
IC Engine Patents 2

U.S. Patent Office
reprinted by Lindsay Publications

Another 18 unusual engine patents! These were chosen because of their unusual operation and/or appearance. If you're itching to build an engine that no one has ever seen or heard of, this could be a gold mine for you.

The opposed piston Lindford engine provides a power stroke every one and a half revolutions of the flywheel. Benier's patent covers a novel way of firing the fuel/air charge and of keeping the engine cool. Examine the Wigmore rotary, the Teichman spider engine, the Frost triple cylinder engines by Daimler & Diesel, and more!

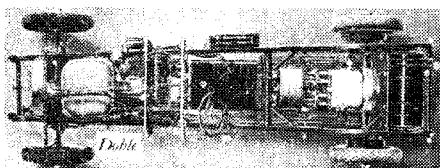
Interesting stuff. Like our other patent books, some text is difficult to read, but the illustrations are in good shape. A bargain. Get a copy! 8 1/2 x 11 softcover 96 pages
No. 22156 \$9.95



A Note From Vince Gingery...

[I hear] Jim Lewis has successfully built a version of the first engine shown in your patent drawings book, "IC Engines Vol. 2." [Above] Thought you might be interested. Says it's a one twist starter and keeps on running. He also says it's weird looking with lots of things moving while it is running, which makes it interesting to watch. Dad and I will be going soon to see it and some other things he has built. When we do I will shoot a couple of pictures of it.

Vince



The Modern Steam Car and Its Background

by Thomas S Derr

reprinted by Lindsay Publications

I knew this was a fascinating book when I saw it years ago for the first time. Recently a customer provided an original copy so that it could be reprinted.

Originally published in 1932 by Floyd Clymer and revised in 1934, this enjoyable and nicely illustrated book covers the magic of steam, history of steam power, history of steam cars, modern steam cars, and the operation and care of steam cars.

You get information and photos on machines from Cugnot's auto of 1770 to the Stanley Brothers and others. The last chapter covers in detail the vehicle produced by the American Steam Auto-

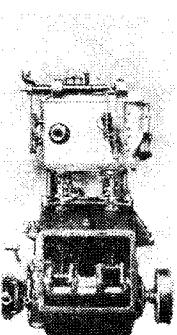


FIG. 3. RIGHT SIDE OF THE WHITE STEAM ENGINE
Substitute reprinted from the original issue. *Amateur Work*

The photos are not as good as I would like them, but it's all we have to work with. I think you'll find them acceptable.

Fascinating reading for steam buffs, auto buffs, and machinery nuts in general. Get a copy! 5 1/2 x 8 1/2 paperback 148 pages No. 22172 \$11.95

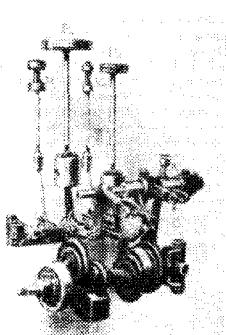


FIG. 4. THE INSIDE PARTS OF THE WHITE STEAM ENGINE
Substitute reprinted from the original issue. *Amateur Work*

1. High Pressure Cylinder 2. High Pressure Valve

3. Low Pressure Cylinder 4. Low Pressure Valve

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New Catechism of the Steam Engine

by N. Hawkins, M.E.
reprinted by Lindsay Publications Inc

There are a lot of early steam engine books that are not worth reprinting. Garbage doesn't get better with age. Here's one, though, that is really superb.

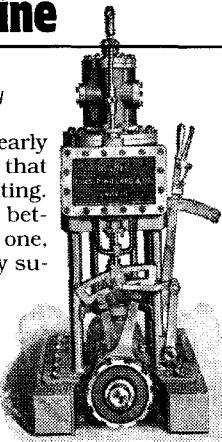
You'll find page after page of illustrations, usually great old engravings, and detailed technical description on every conceivable steam power device from Corliss, McIntosh & Seymour, and Porter-Allen engines, to Conover independent jet condensers, steam road rollers, Baldwin Locomotives, and steam fire engines. You'll see everything from hoisting engines to air and refrigeration compressors.

You even get chapters on gas, oil, and hot air engines. You'll see engravings and cut-away drawings of the Otto gas engine, the Simplex naphtha engine, the de LaMater-Ericsson hot air pumping engine, and others.

Original copies of this 1904 master reference are not easy to find, but you can have your own personal copy for much less than the cost of an original. This is a "must have" book for any steam enthusiast. Wall to wall illustrations! You'll like it. Order a copy today. 5 1/2 x 8 1/2 softcover 437 pages

No. 4619

\$19.95



BOILERS - Types & Design

by International Correspondence Schools
reprinted by Lindsay Publications

From 1907 you get three of the best sections on boilers from the same books that yielded "Steam Engine Design" described elsewhere in this catalog.

In the first section you'll be introduced to stationary boilers of the horizontal shell, flue and tubular types. You'll explore horizontal return-tubular boilers, and boilers with names like Cornish, Galloway, and Clyde. You'll see the locomotive or firebox boiler, vertical tubular boilers, the Babcox-Wilcox, the Heine, the Stirling, the Hazelton, the Morrin Climax boiler and more.

You'll investigate boiler design: proportions, power, and construction. Then you'll be exposed to formulas that when used with a pocket calculator will give you hard answers to "what-if" questions. You'll learn how big you'll have to make the grate to get a certain number of horsepower, about iron and rivets, and about testing. You'll see both bolt and bracket boilers stays, as well as stays for both locomotive and marine boilers.



The formulas will give you ball park figures for strength of plates, the number of rivets you'll need, allowable pressures on direct stays, width and thickness of reinforcing rings, number of tubes in a horizontal tube-return boiler and much more.

This is NOT about building a particular boiler of a particular size. This is a textbook designed to introduce the 1907 apprentice to the state-of-the-art. If you decide to build a boiler, you'll want to consult modern expensive engineering texts for pressure vessel standards. It is essential that you see what modern safety recommendations are now being made.

If steam is your thing, and you're just starting to think about a boiler, this is a must-have. Good book. 5 1/2 x 8 1/2 softcover 134 pages

No. 22113

\$9.95

Injectors:

Their Theory, Construction and Working

by W W F Pullen

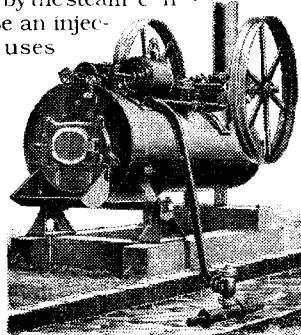
Steam power fans know that as you take steam out of the boiler to power the engine, you have to replace it with water. If you let the water drop too far, you risk a boiler explosion. But if the steam in the boiler is at 200 psi, then you have to force feed water into the boiler at more than 200 psi. How do you do it? The obvious solution is to use a pump driven by the steam engine. OR! use an injector which uses steam to inject water into the boiler without moving parts. Injectors almost seem to be magical.

Here's a reprint from England of an 1893 British gem on injectors. You get detailed text, loads of drawings, plans, charts, and probably more math than you'd like. But there is more in this book on injectors than I can ever remember seeing elsewhere. You'll find details on lifting, automatic, and restarting injectors, flap nozzles, compound injectors, ejector condensers, water injectors, air injectors, and more.

Top rate. Steam power fanatics should seriously consider adding this to their reference library. Powerful stuff! Get one. 5x7 softcover 188 pages

No. 1446

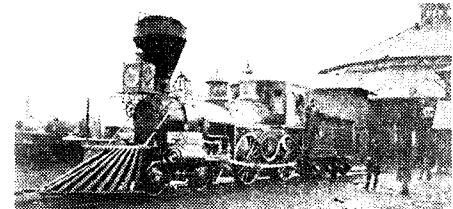
\$17.95



A History of the American Locomotive

by John H White

Study early American locomotives from 1830-1880. You'll see the 4-4-0's with their beautiful high drivers and balloon stacks, the same machines that Meyer describes in "Modern Locomotive Construction" else-



where in this catalog. But there are also early versions of Moguls and Consolidations, as well as others.

Jack White, now retired as a curator from the Smithsonian, has written a number of books, but this is probably his most popular and enduring. Locomotive nuts will enjoy the history and nitty-gritty details about rods and crosshead, fireboxes, decoration, valve motion, throttles and every conceivable detail of these fascinating machines. You get three sections: early design and development, evolution of components, and in-depth examinations of 20 individual locomotives.

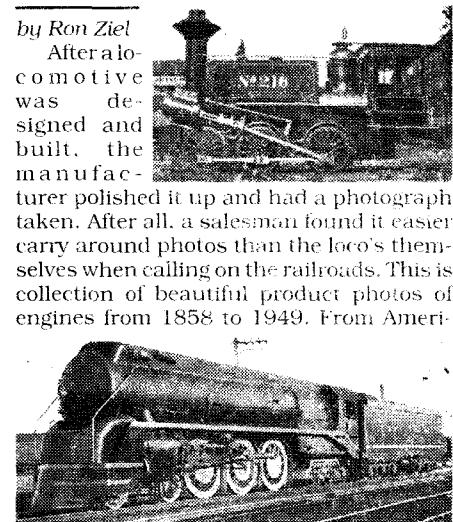
Great photos and drawings. Great detail. A very special book that has been around since 1968. Lotsa meat. Definitely worth having. 8 3/4 x 8 softcover 528 pages

\$24.95

American Locomotives in Historic Photographs

by Ron Ziel

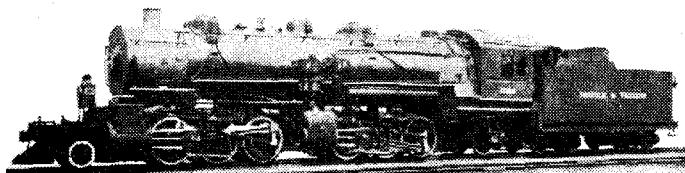
After a locomotive was designed and built, the manufacturer polished it up and had a photograph taken. After all, a salesman found it easier to carry around photos than the loco's themselves when calling on the railroads. This is a collection of beautiful product photos of engines from 1858 to 1949. From Ameri-



cans and camelbacks to narrow-gaugers and monster 2-8-8-2's. All pitchers with a paragraph describing each. Lovely hardware. 9x12 softcover 129 pp 126 photos

No. 1464

\$12.95



Locomotive Valves & Valve Gears

with a Special Treatise on Valve Setting

by Yoder & Wharen

"An explanation of the construction and action of the plain slide valve, the piston valve and the gears which operate them, as applied to locomotives."

Getting a steam engine to run isn't all that hard. Getting a steam engine to purr along at high efficiency is another matter - a matter solved only by intelligent use of sophisticated valve gear. Here you get the details of valve gear used on railroad locomotives in 1917.

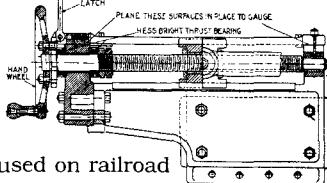
Chapters include locomotive valves and valve gears, the Stephenson valve gear, the Walschaert valve gear, effects of altering the valve and its events, locomotive valve setting, an appendix and so on. The fourth chapter discusses the Baker, Southern, Joy, Young, and Allen valve gear, and the Gooch stationary link.

Most valve gear books I've seen are loaded with geometric drawings teaching the design of the gear. Geometry is important, but this is somewhat different in that it is loaded with great views of locomotives, cross sections of valves and pistons, and detailed drawings of the gear. In other words, this isn't so much theory of design, as it is a handbook for locomotive shop men in keeping their engines running efficiently.

Excellent book. Great illustrations. Must have for railroad buffs, but useful for all steam enthusiasts. A reprint of an American book produced in England for British steam buffs. Get a copy! 5 1/2 x 8 1/2 hardcover 272 pages

No. 1344

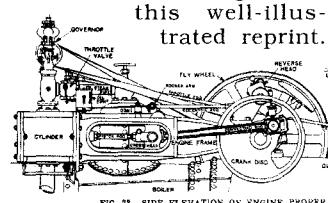
\$23.95



Case Steam Engine Manual

by J. I. Case Co.

Learn to run a World War I Case steam traction engine from this well-illustrated reprint.



Chapters include: fitting up and starting a new engine, the feed water, firing with various fuels, lubrication and bearing adjustment, handling the engine, the engine proper, the valve gear, the boiler traction gearing, and the compounded engine.

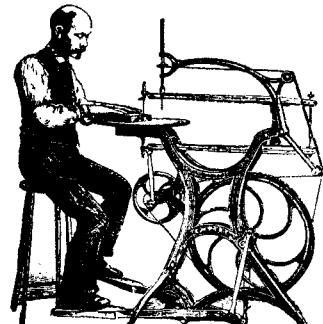
Learn how to use "gage" - or "try" cocks, how to start a Penberthy injector and what to do if it fails to work, how to pack the water-glass, how to pack a gear driven injector pump, how to regrind check valves, how to fire with low-grade coal and straw, how to adjust connecting rod brasses, details on

rebabbitting main frame bearings and upper cannon bearing, and lots more.

If you're into steam, get a copy of this. It's interesting and low cost. Excellent buy. 5 1/2 x 8 1/2 booklet 70 pages

No. 1260

\$6.00



from the
1895 Strelinger Tool Catalog
elsewhere in this catalog...

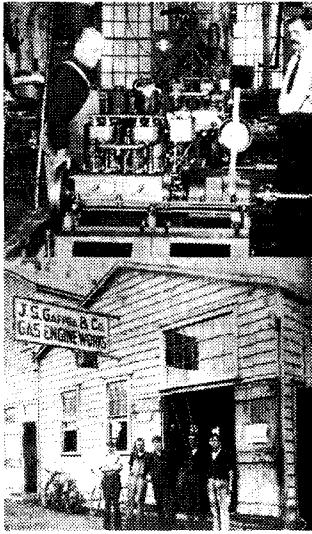
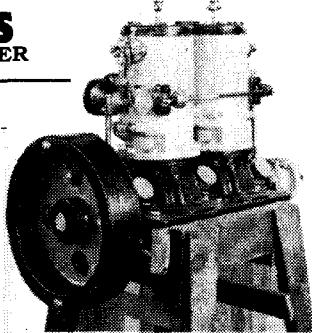
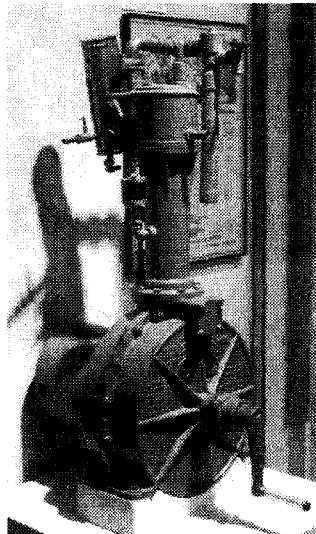
Old Marine Engines

THE WORLD OF THE ONE-LUNGER

by Stan Grayson

A great book on old one-lung engines built to power boats! Loaded with pictures - from boats on the water to the foundries and machine shops where the engines were built. Fascinating stories and details of the people who built and used the engines.

Chapters include the coming of power, portraits, art and science of



the two-stroke, how they built them, Daniel and Charlie and the Atlantic Marine Engine, Daisy, survivors, The Catboat Mabel Hawker, the world of the one-lunger, marine engine builders in the US and Canada, fisherman Joe and his gasoline kicker, Kingfisher - a 14 foot fishing skiff, operation and care of engines, and marine engines in museum collections.

This is great reading. You can jump in almost anywhere and discover manufacturers, their facilities, and their components. You'll find photos of one- and multi-cylinder engines, cylinders being bored, patterns used

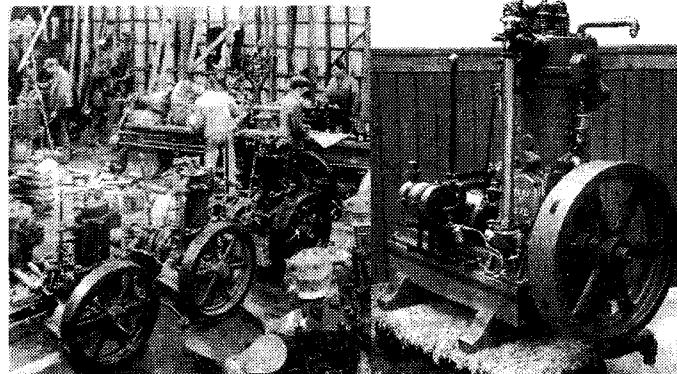
to cast the engines, beautifully restored single-cylinder Diesel engines, and much more.

Forget the word marine. If you're an engine nut, this is definitely worth having. Consider it carefully. 7x10 softcover

256 pages

No. 1481

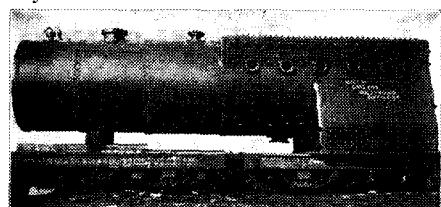
\$34.95



Laying Out for Boiler Makers and Sheet Metal Workers

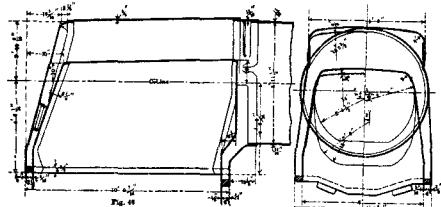
by Aldrich Publishing Company
reprinted by Lindsay Publications

If you like to work sheet metal, this 1918 volume will show you the geometry you need to layout and fabricate some of the most unusual tapered, gooseneck adapters and unusual curved forms you'll ever see. After all, boilermakers need information beyond the obvious.



Chapters include the subject of laying out, triangulation, how to lay out a tubular boiler, how to lay out a locomotive boiler, how to layout a Scotch boiler, repairing locomotive and other types of boilers, the layout and construction of steel stacks, and miscellaneous problems.

This is wall-to-wall drawings comparable to Meyer's "Locomotive Construction." The headings under each chapter are unlike anything else I can recall seeing: holding quantities of flues, smokebox liner, firebox crown sheet, circumferential seams,



backing out rivets and repairing cracked mudring, nest coil semi-flash boilers, and on and on.

The last chapter on "miscellaneous problems" makes up more than half the book! There are boilers that look like brew kettles and an intake elbow for an 18,000 hp water turbine! One pattern will you how to make a pouring lip for a foundry ladle. You get details, hints, tips & formulas for fabricating locomotive boilers and more...

This is a "must-have" for sheet metal workers, steam engine builders, and steam power and technology historians. It's all nuts-and-bolts, practical how-to, 100% illustrated. You won't be disappointed. Get one! 8 1/2 x 11 cloth 416 pages
No. 21630 \$39.95

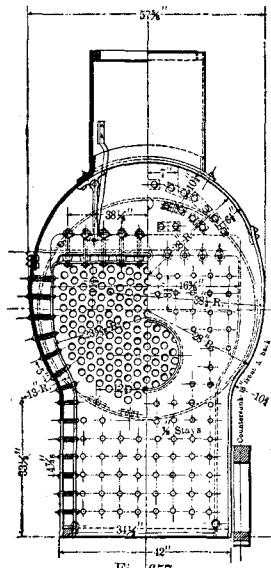
Modern Locomotive Construction

by J G A Meyer

Build yourself a locomotive! Meyer was an associate editor of *American Machinist* magazine, a member of the ASME, and chief draftsman for the Grant Locomotive Works. If any one could take you by the hand and show you how to design an 1892 locomotive from the ground up, he could.

You learn every aspect of design and construction with over a thousand illustrations, most of them being incredibly detailed working drawings. You get detailed how-to knowledge that can only be acquired from working in the industry.

For instance, Meyer discusses milling special grooves in order to



to impress the mourners at a wake.

There is no way I can describe this book other than throw a few quotes at you and reproduce a few of the illustrations. The detail is mind boggling.

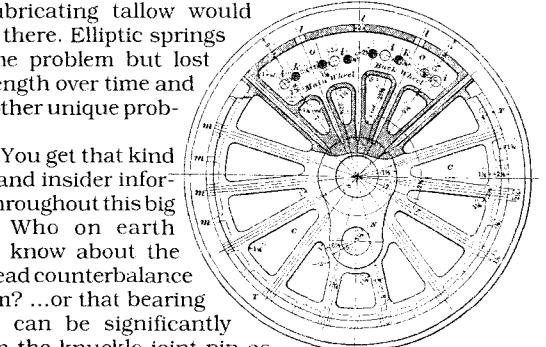
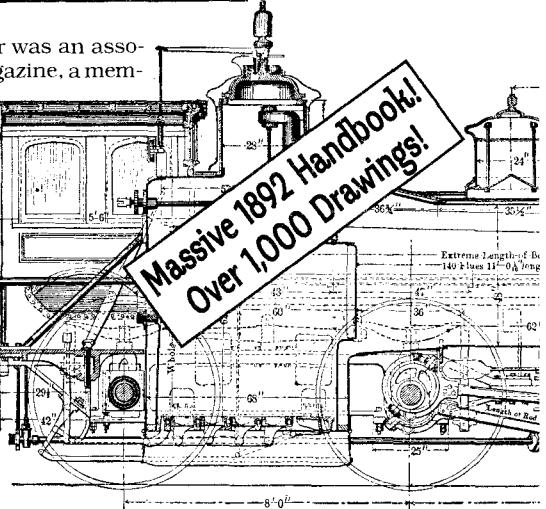
Let's suppose you're going to put a diamond-shaped smoke stack on your soft-coal-burning locomotive. Meyer shows you a diagram of a typical diamond stack. "...The cylindrical part D of the stack often consists of two shells, leaving an annular space about 5/8 inch wide between them. Sometimes four 1-inch holes are drilled through the outer shell just above the flange A, and another four holes are

drilled through the outer shell near the top, for

the purpose of creating a circulation of air through the annual space. This arrangement prevents the outer shell from becoming overheated and blistering the paint..." and on and on he goes. Blister the paint? I would be very proud to build an engine that would run well whether it were painted or not.

Reprinting this has been very expensive, but it had to be done. The price may appear high, but it's a bargain. It should sell for very much more. Get a copy of this. A gem! You'll like this. 8 1/2 x 11 hardcover 685 pages
No. 21443 \$44.95

Massive 1892 Handbook!
Over 1,000 Drawings!



Contents

- Classification of Locomotives - Trains Resistance - Tractive Power - Weights of Engines • Construction of Cylinders - Steam Pipes - Slide Valves • Valve Gear - Construction of Links - Pistons - Crossheads - Slides - Stuffing Boxes • Frames and Pedestals - Axle Boxes • Driving Axles - Driving Wheels - Counterbalance • Main-Rods - Side Rods - Crank-Pins • Throttle Pipes - Throttle Valve Gear - Safety Valves - Whistle - Pumps - Check Valves • Spring Gear and Springs • Boilers - Grate Surface - Heating Surface - Riveted Joints - Extension Fronts • Ash-Pans - Smoke Stacks - Exhaust-Pipes • Sand-Boxes - Bells - Pilots - Engine Braces • Engine Trucks • Oil-cups - Valves - Cocks - Injector • Tenders - Tender Trucks • Useful Rules, Formulas, and Data • Compound Locomotives.

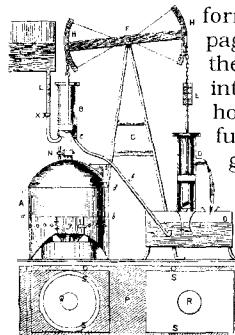
Steam Engine Projects

from the Young Mechanic 1871

reprinted by Lindsay Publications

The 1896 edition of the Young Mechanic contained mostly dull information in its 340 pages. At the back of the book, however, were interesting chapters on how to build simple but functioning steam engines and their boilers. Only those chapters have been reprinted here.

Chapters include: How to Make a Steam Engine, Watt's

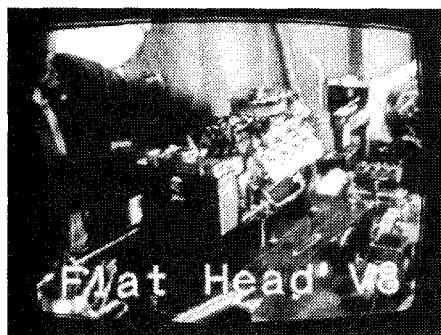


Engine, and How to Make an Engine. You'll learn about the basics of steam power, packing glands, Newcomen's engine, details of Watt's steam engine, and throughout details on building both the engine and boiler.

Certainly, this is not a sophisticated engine, but IT IS an engine that almost anyone should be able to build and operate. Even if you don't build the engine described, you will find useful ideas that you can apply to your own design.

It's great old information at a very reasonable price. Order a copy. 5 1/2 x 8 1/2 softcover 64 pages leatherette cover

No. 20234 \$4.95



1995 Names Video

produced by Bob Bailey

Tour the North American Model Engineering Society's (NAMES) 1995 meet at Wyandotte MI. If you were there, this is what you saw.

You'll see models of 18 cylinder airplane engines, a huge DC-3, ocean freighters, sternwheelers, steam fire engines, merry-go-rounds, clocks, machine tools, Stirling engines, auto engines, stationary engines, and more than I can possibly describe here.

You have to see and hear some of the model engines run: a Model A Ford four cylinder, a '32 flathead V8, an Offenhauser, inline four cylinder aircraft engine, the radial aircraft engines, and more. You've got to see the footage of the red-hot pulse jet in operation, as well as the geared Shay under steam and the .22 caliber Gatling gun firing.

You'll see a three dimensional mechanical trig computer, cannons, a rabbet plane the size of your thumb, an operational Stanley Steamer model, a working model LeBlond lathe, a Garratt locomotive, and much more.

There is NO way I can get pictures off the TV screen and onto the page here. I can't capture the detail, the color, the motion and the sound. You have to see the tape. The NAMES convention is an exhibition you should see. If you like to build things, you'll watch this tape many times. Impressive. Get a copy. About an hour VHS NTSC only

No. 1404

\$24.95

1996 Names Video

produced by Bob Bailey

Another exhibition. Another video. Interesting stuff. You'll see such things as wooden oscillating engines, gas tractors, trawlers, tugboats, and model riverboats, many heat engines including working low-delta T engines, and one built from wood & coffee cans. You'll see an absolutely incredible totally functional Corliss engine that could fit in the palm of your hand. It's more jewelry with its 300 tpi screws than machinery. Take a look at beautiful tethered racing cars from the 30's and 40's, and Kent Lund's collection of tethered racing boats including a world record holder at 51.52 mph in July 1940. You'll see engines of every shape and size.

This tape is more or less a continuation of the '95 tape and has far less narration. You'll hear mostly crowd noises and unmuffled exhaust blasts. What is really interesting at the very end is a short but fascinating explanation by one modeler himself on how he cast and machined the more difficult parts for the Bentley BR2 Aircraft Engine. You'll see castings with cores still in place, the jigs, the tooling, the patterns and core boxes. He'll explain the tricks he used to mass produce the cylinders.

Interesting tape. Get one. VHS NTSC about 55 minutes

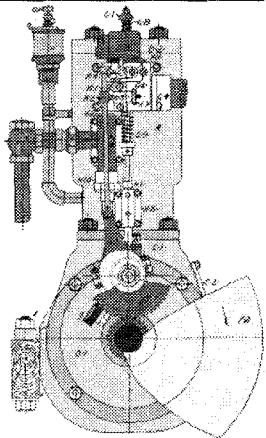
No. 1439 \$24.95

How To Build A

Three Horsepower Launch Engine

by E.W. Roberts.

"I have reprinted this classic 1901 text written by a well known engine designer with the intention of allowing an amateur to build patterns, machine the castings, assemble the engine, test the engine, and install it in a boat. The book has complete instructions and drawings for every part of the engine, including the igniter and the carburetor." — Andrew Menkart



Interesting engine. Five-inch bore and six-inch stroke. At 350 rpm it should generate three or four horsepower. This is a brief book, but it's loaded with details and dimensioned plans. This is not a Gingery manual. You must know at least a little something about building engines.

From the preface:

"The object of this book is to furnish its purchasers with a design for a complete launch engine for a small boat, and to furnish also all the necessary special instructions for its construction. The author assumes that the reader who attempts to construct this engine has some knowledge of machine shop practice....

E a c h plate is made in the form of an actual working drawing, such as would be furnished the workman in the average shop, and no attempt to draw pictures has been made....

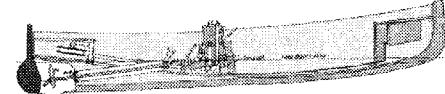
The author has tried to point out the best way of making each part, more as a guide to the mechanic, and in order to help him work the parts in such a way as to get the best results, than to lay out a routine that he must follow....

In regard to the patterns, and especially the cored work, the author advises the assistance at least of a good pattern-maker, if this part of the work is not turned over to him entirely....

If you're into engines, this is special. Build one. Put it in your row boat, go water skiing. Well... maybe not. Good book. Get one. 8 1/2 x 11 softcover 66+ pages

No. 1474

\$15.95



Gas, Gasoline and Oil-Engines

by Gardner D Hiscox

reprinted by Lindsay Publications

"A complete and practical work treating on gas, gasoline, kerosene, and crude petroleum oil-engines including producer-gas plants for gas-engine owners, gas engineers, and intending purchasers of gas-engines, fully describing and illustrating the theory, design, construction and management of the explosive motor for stationary, marine and vehicle motor power."

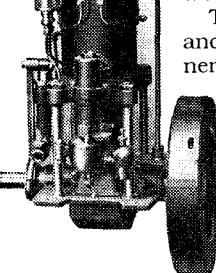


Fig. 368.—The first motor-bicycle, made by the Autocar Automobile Manufacturing Company, America, 1896.

This is a classic loaded with photo's, drawings, and engravings of engines, and all the components that go into their construction from ignition systems to valve mechanisms, from clutches to lubrication pumps. You even get off-the-wall info on propellers for marine engines and use of steam engine indicators on IC engines.

You also get a great illustrated chapter on converting coal into producer gas. These are big stationary plants to turn coal into gases that can be burned by an engine. This is great info for the guy who wants to perfect a small bumper mounted unit for his car so that he can burn wood instead of gasoline. These units may also be adaptable to the production of coke. Don't know. You figure it out.

The last chapter is a great research tool. You get the dates, numbers and inventor names of several thousand engine patents granted between 1875 and 1910. You get NO details however. This can be useful if you're researching the output of a particular inventor, say, Diesel for instance. But beyond that, many of the patents are of little interest.

Great book. A must have for the engine nut. Classic text. Loaded with rare information of all types. Get a copy. 18th edition 1910 - 5 1/2 x 8 1/2 softcover 476 pages

\$19.95

A Very Small Piece of the Contents Page...

CHAPTER VIII The Materials of Power in Explosive Engines.—Illuminating Gas, Natural Gas, Producer-Gas, Gasoline, Kerosene, Acetylene, and Alcohol.—Composition and Fuel Valves.—Tables .. **CHAPTER IX** Carbureters and Vaporizers.—Vapor-Gas for Explosive Motors.—Atomizing Carbureters and Vaporizers.—Methods of Starting Motors. . **CHAPTER X** Cylinder Capacity of Gas and Gasoline Engines.—Tables of Sizes and Powers. Cylinder Diameter, Stroke, and Motor Parts.—Table of Motor Dimensions . **CHAPTER XI** Governors and Valve-Gear. Fly-Ball, Inertia, and Pendulum Types. Direct Valve-Gear.—Cams **CHAPTER XX** Gas and Gasoline Motors.—The Amateur's Motor.—Gemmer. Westinghouse, Lambert, Union,

Blakeslee, Hatrig, Root & Vandervoort, Hubbard, Fairbanks, Morse and Company. Motors. Crude-Oil Generators . **CHAPTER XXI** Marine Motors. Marine Engines and Their Work. Table, Size of Engines and Boats.—Bridgeport, Yacht Gas-Engine and Launch Company Motors. - Racing Launch. Godshalk and Company Motors. — J.J. Parker Company and Standard Construction Company Motors. — Trawl Boats. Mianus, Hall Brothers', Lozier, Cushman, and Smalley Motors. - Speed Boats. - Cooling the Cylinders. — Offset Cylinder. Ignition and Lighting Outfit. Make-and-Break Ignition. — Working Boats. — Wiring Make-and-Break Engines.—and more!

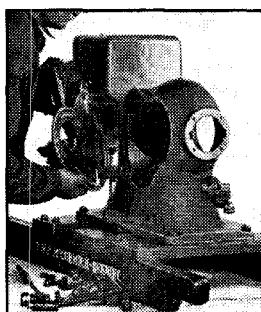
McCormick-Deering Gas Engine Handbook

by International Harvester Co

A reprint from the early 1900's: "A brief, illustrated treatise on the principles of operation of the internal combustion engine, together with a description of the McCormick-Deering engine and instructions for its care and repair."

Here, you get a great repair and maintenance manual for early one-cylinder engines in the 1 1/2 to 5 hp range.

The chapters include why a gas engine?, what makes a gas engine run, how to obtain proper speed, pulleys, belts and how to care for them, McCormick-Deering engines, gen-

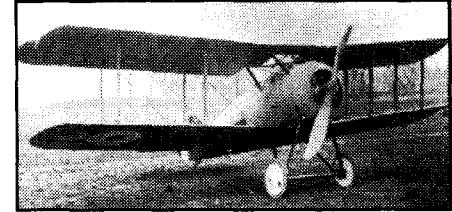


eral care of the engine, and overhauling.

Half of what's in this book you already know. But the last half with its how-to and great photographs make this worth every penny of the low price. If you're an engine nut, you had better order one or the rest of us are gonna think you're running on fumes. Good stuff. 5 1/2 x 8 1/2 booklet 64 pages

No. 1461

\$5.95



Bentley BR2

WW 1 Rotary Aero Engine

by L K Blackmore

The backcover tells the story better than I can:

"This book contains a detailed account of the building of the one quarter full size working model of the famous Bentley B.R. 2. aero engine which came into prominence in the closing stages of World War I. It represented a substantial improvement in both power output and reliability. It was the last of the rotary engines, in which the whole engine rotated around the crankshaft, which in turn was secured to the airframe.

The model of the B.R. 2. described in this book was the successful result of an attempt to restore the design of this historic engine. No drawings of the full size engine have been discovered, and very few examples of the full size engine exist. The original model, built by the Author, won a Gold Medal at the 1981 Model Engineer Exhibition at Wembley, and the Duke of Edinburgh Challenge Trophy at the 1982 Exhibition. Since then two other engines, built from the published drawings, have won Gold Medals at subsequent Exhibitions. Others are under construction.

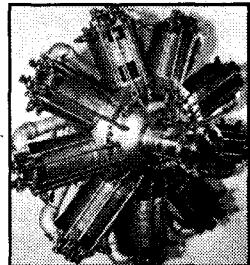
The great interest shown worldwide in the Author's model led to the decision to publish a detailed description of the building, which includes all the fully dimensioned drawings, with over fifty accompanying photographs...

The descriptive portion taken from the official Air Ministry Handbook has been reprinted in the Appendix, with the kind permission of the Ministry of Defence. This book itself is now extremely rare and was considered to be well worthwhile incorporating."

This incredible book first appeared in 1986 and was brought back by Camden Miniature Steam in England in late 1996. If you want to knock the socks off the competition, you should consider building one of these. Excellent book loaded with rare information. Get one. 8 1/2 x 11 paperback 96 pages

No. 1421

\$18.95



Forward

I met Clessie Cummins in 1964 or 1965 soon after I joined Cummins Engine Company. He and I shared a ride on the company plane. It was a journey I will never forget - an opportunity to hear first hand from the charismatic inventor whose vision and determination had transformed a small, slow source of stationary power into a mobile high-speed engine that revolutionized the transportation of goods in America and around the world.

In many ways diesel trucking owes its success to the Great Depression of the 1930s. As the economy plummeted, truckers got serious about the diesel and its huge fuel economy advantage which Clessie shrewdly emphasized with a highly publicized coast-to-coast tour at a fuel cost of only \$11.32. During our plane ride, Clessie recalled seeking out machine shop owners who had padlocked their doors as business dwindled during the depths of the Depression.

Together, he and the owners would open up the buildings, throw back the canvas covers and start up machines to make parts for the new diesel engines. Even then, Clessie's enthusiasm was contagious!

Drawing on a wealth of private correspondence, early Cummins Engine Company documents, public records, and Clessie's own technical notebooks, Lyle Cummins has succeeded in taking us into the mind and heart of this remarkable diesel pioneer. He captures Clessie's passion for problem solving as he worked tirelessly to develop a new technology; his persistence in the face of setbacks; and the adventurous spirit which led him to test diesel technology by racing against the best at the Indianapolis 500. Lyle also captures the principles by which Clessie lived - including fierce loyalty to friends, family, and the company that bore his name as well as his conviction that technology must, first and foremost, meet the needs of its customers. As a keen student of diesel technology, an historian, and an inventor in his own right, Lyle is uniquely qualified to serve as narrator for his father's "Diesel Odyssey," adding balance and perspective to Clessie's own memories.

Clessie lived long enough to see his vision become a reality and diesel trucks dominate interstate commerce. While the high-speed engine developed by Clessie and his engineers in the 1920s and 1930s has been improved many times over the years, the technology endures and retains the capacity for further development. Clessie's personal journey is over, but the Diesel Odyssey continues.

James A. Henderson Chairman and Chief Executive Officer CUMMINS ENGINE COMPANY, INC. July 1998

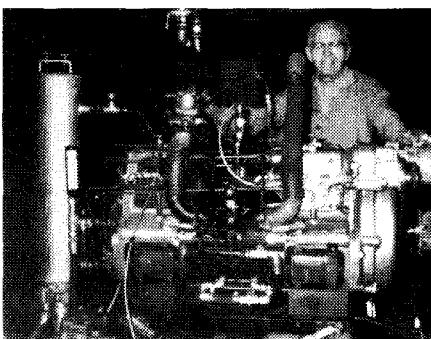
The Diesel Odyssey Of Clessie Cummins

by Lyle Cummins

"Clessie Cummins was the Father of the American truck diesel. His inventive genius generated 33 U.S. patents over 56 years. He founded and was president for nineteen years of the diesel engine company bearing his name. Salesman and entrepreneur, he set world speed and endurance records in race cars and trucks. The American Society of Mechanical Engineers and the Society of Automotive Engineers posthumously honored him for his pioneering achievements. He was an educated man, although his formal schooling ended at the eighth grade.

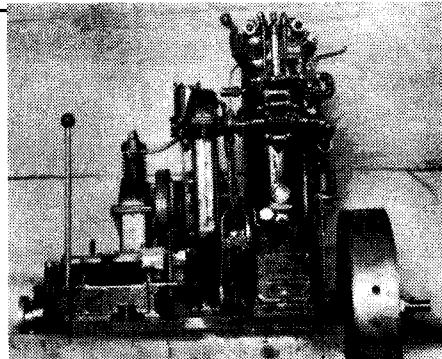


(above) Clessie's 1905 homemade auto (below) boring an engine cylinder in his basement shop (bottom) Clessie proudly standing by his new barrel engine just months before he died in 1968.

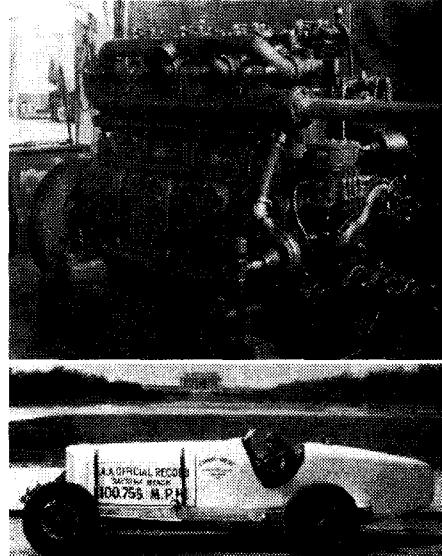


A tireless individual, he paid a price in declining health for years of grueling effort yet, in his retirement, he created a new product which launched a second industry. At almost eighty he designed, built and ran a new concept engine in his basement shop."

Clessie Cummins could probably be regarded as the Thomas Edison of truck diesel engines. Lyle tells the story of his father's amazing life and creative genius. But Lyle, himself, is a mechanical engineer, so what you get here is also an appreciation of machines. And this volume is loaded with technical details, photographs, patent drawings and so on. If you have seen "Diesel's



(top) 1924 Model F single cylinder marine engine (above) men with unusual names: Clessie Cummins on the left and Edsel Ford on the right (below) 1926 semi-enclosed Model P marine engine (bottom) Clessie in Washington DC, March 1931, behind the wheel of his diesel powered Duesenberg after setting speed record in Daytona



Engines", you have an idea of what this is all about. Brand new. I haven't read all of it, but what I have read is fascinating.

Many great photos: You have to see the automobile Clessie built in 1905 at age 17. Clessie test drove the Marmon Wasp which won the first Indy 500, and Clessie was in the pit crew. His first oil engine was sold by Sears. He built marine diesels. He shoehorned a diesel engine into a 1925 Packard. And on and on.

This is a guy I would have liked to have met. What a go-getter! Another Edison. And Ford. And this is a great book very much worth having. Great inspiration for all of us. Good stuff. Get one. 6x9 hardcover 399 pages
No. 1473

\$37.95

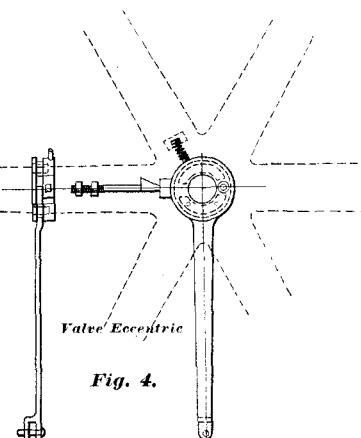
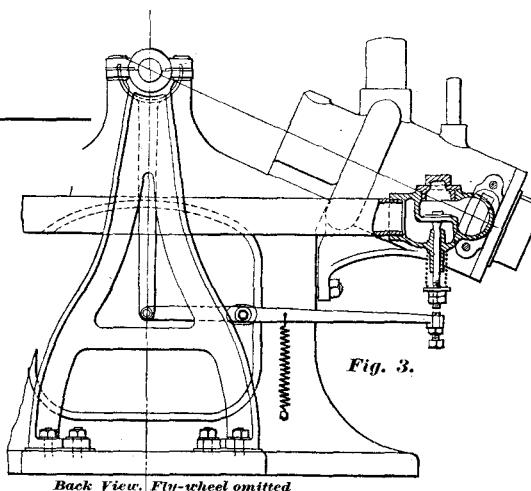
The Backus Gas Engine.

We present on this and the next page engravings showing the construction of a new gas engine, which in its method of governing, and in other details of construction, will be found to contain points of interest.

As will be seen by the engravings, the frame of the engine is of a modified A form, with the crank-shaft at the top, and there are two cylinders of equal size, which are inclined, the one at the left being the working cylinder, while the one at the right is a pump in which the mixture of gas and air is first received and compressed by the pump piston, after which it passes through a large pipe connecting the two cylinders, and is admitted to the working cylinder by a poppet valve, the opening of which is controlled by the governor. Gas is admitted to the compressing cylinder by a pipe which enters the head, and air enters through a number of holes which are made in the head around the pipe, as shown by the end view of this head at the right of Fig. 1. The holes through which air enters are covered by a valve which is opened by atmospheric and seated by the pressure within the cylinder. The proportions of gas and air are controllable by a valve in the gas supply pipe.

Near the working cylinder, and in the large pipe which joins the two cylinders, is a poppet valve having a stem projecting through a stuffing-box below, as shown at Fig. 3 (page 2). This valve is seated by the spiral spring shown, and is lifted to admit the explosive mixture to the cylinder by the lever shown below, which is pivoted to the side of the frame, and receives its motion from an eccentric which located just inside the fly wheel, as shown in section at Fig. 2, and side view in Fig. 4. This eccentric is in two parts joined together by a hinge joint at one side, one of the parts being secured to the end of the hub of the fly wheel by screws as shown, while the other is free to move upon the hinge joint to give greater or less eccentricity, its tendency to fly outwards being resisted by the spiral spring shown.

The amount of eccentricity is then controlled by the wedge seen at the left of the eccentric in Fig. 4, and under it, in Fig. 2, this wedge being attached to one of the arms of the fly wheel, and its distance from the center of the shaft controlled by the opposing forces



of the spiral spring shown behind it, on the one hand, which tends to force it inwards and open the eccentric, while upon the other is the centrifugal force of the weight under the spring, which tends to withdraw the wedge and allow the eccentric to close.

A half strap fits in the groove of the eccentric below, from which, by the connections shown in Fig. 3, the valve is moved, and admits more or less of the mixture to the cylinder, according to the requirements for the work being done, an explosion taking place at every revolution where needed, and yet leaving a margin for governing.

There is no exhaust valve, but towards the upper end of the cylinder there is

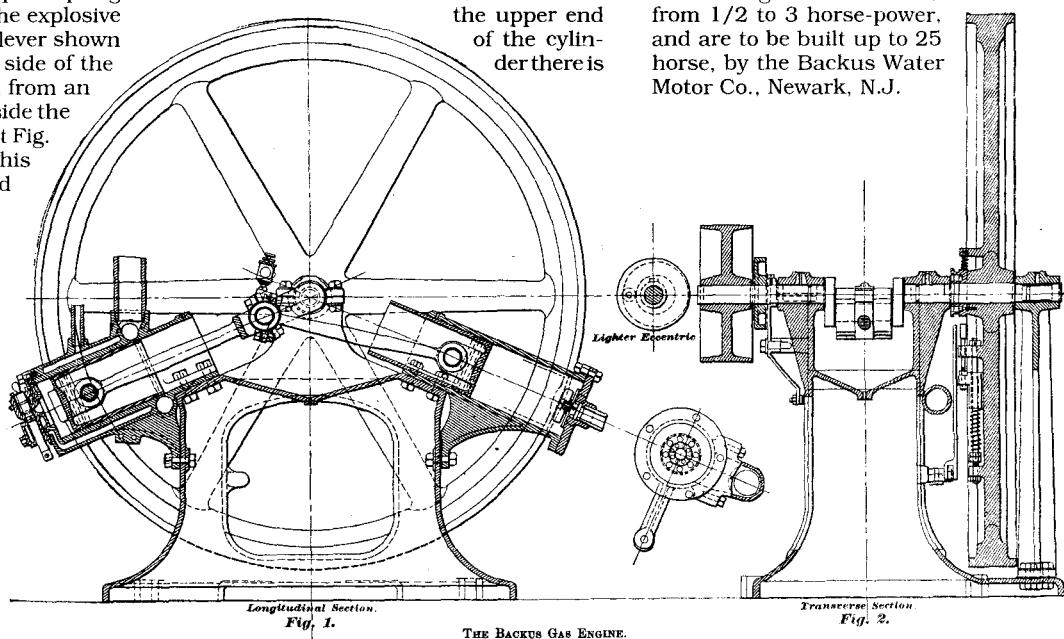
a narrow opening or port, which passes entirely around the inside of the cylinder, and connects with the large passage seen, which also extends around the cylinder, and at the top is connected with the exhaust pipe as shown. The piston passes over this port at the end of the stroke, and exhaust takes place. The port, though of large area to give a free exhaust, is considerably narrower than the packing rings, so that there is no trouble from the rings entering and catching in it. The lighter is seen at the left of the working cylinder, Fig. 1, and is operated by a cam placed on the crank-shaft just inside the belt pulley.

A small jet of gas is kept burning, and a cylindrical valve operates to give communication with the contents of the cylinder at the beginning of the stroke.

Provision is made for cooling the cylinder by circulation of water, as shown, and also for through lubrication.

It has been found by experiment that the regulation is all that could be desired, and there is no trouble in starting the engine at any time.

The engines have been built in sizes from 1/2 to 3 horse-power, and are to be built up to 25 horse, by the Backus Water Motor Co., Newark, N.J.



Green Sand Casting Techniques

by Dave Gingery and Robert Bailey

When I watched this video, I found out

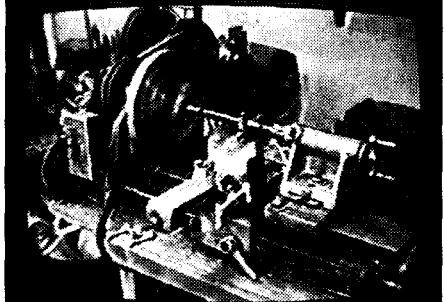


why my castings were only passable, and why Gingery's were expertly done! He shows you how to get a first rate casting.

You get a review of the tools that can be purchased from the hardware store and made from scrap materials. You'll see Dave mold a two part flywheel pattern in bonded silica sand. You'll watch Dave ram up the sand, swab it, rap the pattern, pull it, and repair the damage.

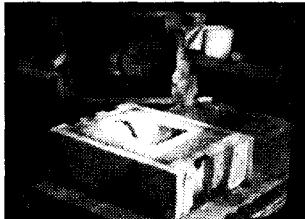
Visit Dave Gingery's Shop!

With the pattern removed and the mold reassembled, you'll watch Dave fire up the gas-fired crucible furnace. You can watch Dave pull out the cherry red crucible and pour the mold. Later Dave shakes out the



mold to reveal a beautiful flywheel casting ready for machining.

As a bonus, you will see Dave's complete homebuilt machine shop fabricated from



aluminum castings. See Dave's lathe in action. Watch his shaper cut flats on a shaft, and his milling machine

surface an angle plate, and more. You'll see Dave's two cylinder Stirling engine running while the match plate patterns used to make it sit in the background. Even the Rider-Ericsson hot air engine is shown running.

Snap up a copy of this VHS video. I guess it's about an hour in length (I was too busy winding and rewinding to get an exact measurement). NTSC only

No. 1320

\$29.95

Green Sand Casting

reprinted by Lindsay Publications

You had better have a green sand mold ready when your ladle is full of molten metal. Learn molding from this 1903 reprint.

Learn about tools, materials and methods, including sands, tempering, sieves and riddles, rammers, required hardness, deep molds and venting, drawing the pattern, closing and pouring, shaking out the casting, and much more.

Learn about molds for casting iron. You get rare illustrated how-to on making joints for irregular forms, three-part molds in three-part flasks, three part molds in two-part flasks,

followboards in forming joints, plaster-of-Paris matches, match plates, gingers and soldiers, setting of cross bars, nails and rods at joints and corners, valuable lessons on patching molds, swabbing broken corners, sleeking and printing dry blackening, skin-dried molds, types of gates and pouring basins and more. Learn about chaplets, problems such as blowholes, shrink holes, shrinking and contraction, techniques of proper feeding, and on and on.

Build Gingery's charcoal furnace. Ram up a mold, melt the pistons out of your car and make a pour. Essential book for your foundry library. Excellent book. Get a copy! 5 1/2 x 8 1/2 softcover 174 pages

No. 4082

\$9.95

Alley pickers can use a charcoal foundry to melt beverage cans with charcoal or coal (if you can stand the smoke) and to cast obscene statues. Cans are made from very pure aluminum, and will serve your perverted needs very well. But if you're going to cast machine parts, you'll

want an aluminum alloy formulated for casting. Pistons seem to make very nice castings. Try the local automotive machine shop. (And if you decide to make anatomically correct castings, fer gawd's sake, don't let the old ladies down the street see them...)

Navy Foundry Manual

by the United States Navy

reprinted by Lindsay Publications

Looking for a great foundry handbook? I hate to admit the government ever did anything right, but this 1958 NAVSHIPS publication is a gem. It's loaded with some of the best foundry photos and drawings I've ever seen. You can learn by merely studying the illustrations.

From the preface -

"The Manual is divided into two general sections. The first section, chapters 1 through 13, contains information of a general nature, such as 'How Metals Solidify,' 'Designing a Casting,' 'Sands for Mold and Cores,' 'Gates, Risers, and Chills,' and 'Description and Operation of Melting Furnaces.' Subjects covered in these chapters are generally applicable to all of the metals that may be cast aboard ship."

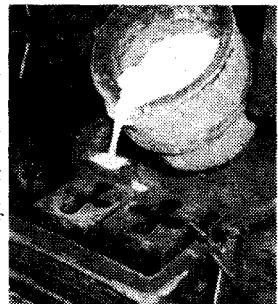
"The second section, chapters 14 through 21, contains information on specific types of alloys, such as 'Copper-Base Alloys,' 'Aluminum-Base Alloys,' 'Cast Iron,' and 'Steel.' Specific melting practices, suggestions for sand mixes, molding practices, gating, and risering are covered in these chapters.

This manual has been written with the 'how-to-do-it' idea as the principal aim. Discussions as to the 'why' of certain procedures have been kept to a minimum. This manual contains information that should result in production of consistently better castings by repair ship personnel."

Although it pays to know why procedures are performed the way they are, the first step IS to perform them. Consider this to be pure practical how-to. It delivers. Excellent book. No two ways about it. If you pour metal, you need this book. Get a copy of this. You won't be disappointed. A gem! 8 1/2 x 11 softcover over 300 pages

No. 20072

\$19.95

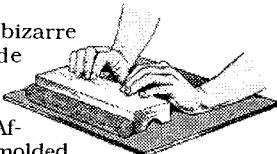


Core Making 1940

by Elmer F. Scott
reprinted by Lindsay Publications

When General Motors casts a manifold for an automobile engine, how do they create the complicated hollow passageways? With cores.

Cores are bizarre shapes made from sand and a sticky binder like molasses. After the core is molded, it is baked until hard. After the main green sand mold is rammed up, the core is carefully placed inside, and the mold is closed



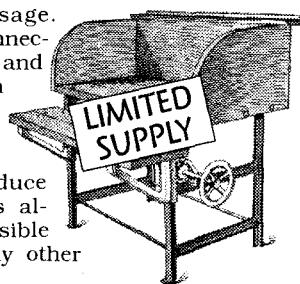
My printer screwed this all up!

He not only reprinted 80 pages on coremaking he mistakenly reprinted an additional 80 pages from the same book on machine molding. In one volume you get two books for a single price!

up. After pouring the casting, the hardened sand core can be broken out to leave the hollow passage.

Cores save unnecessary time and expense in machining, and in manifolds, for instance, produce passageways almost impossible to create any other way.

Although this is a textbook for an apprentice about to enter an industrial foundry, there is enough information to make it useful for the home foundryman. You learn about cores and tests, materials used, core-sand mixtures, green-sand cores, sweeping green-sand cores, making green-sand cores in boxes, making small round cores by hand, core-making machines, reinforcing of cores, venting of cores, core plates



ton, handwheel, flywheel and more. And as you go along you are shown how to make the necessary cores, and the secrets that allow you to pour complex castings relatively easily.

You get dimensioned drawings, demonstrations of how the mold is rammed up, how to turn the cylinders needed in a wood lathe, and much

and dryers, core baking, treatment of dried cores, and core room temperatures.

This is a revised and expanded edition of the coremaking section from *Core Making, Dry-Sand & Loam Molding* that we offered until a couple of years ago. Cores are extremely useful, and the price of this book is right. Get one. 5 1/2 x 8 1/2 softcover 80 pages

No. 21419

\$7.95

Wood Pattern-Making

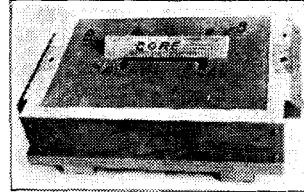
by Herbert J McCaslin
reprinted by Lindsay Publications

Melting metal isn't difficult. Burn enough fuel fast enough, and you can melt metal. What IS difficult is making a useful casting. You need to make a wooden model that can be used to make an impression in the sand into which the metal can flow and cool. Fabricating that model, the pattern, is an art and science. Here you get the secrets.

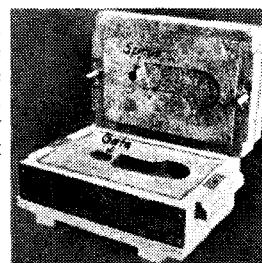
You get two parts: bench work and lathe

work. In the first few chapters you get basic information on precision wood-working, but

then it gets useful. Instead of building an end table, you'll learn how to build patterns so that you can cast a surface plate, clamp, link, bracket, pedestal, pawl, lathe-leg, bell-crank, tool-rest slide, steady rest, tailstock, hopper, gear case, cylinder head, starwasher, lever, rammer head, carburetor connector, glue-pot, water jacket, pis-



ton, handwheel, flywheel and more. And as you go along you are shown how to make the necessary cores, and the secrets that allow you to pour complex castings relatively easily.



You get dimensioned drawings, demonstrations of how the mold is rammed up, how to turn the cylinders needed in a wood lathe, and much

A Small Sample of the Contents

... MACHINE-FINISH Finishing the surface of metal; the indication mark used on the drawing to specify that the operation is required; finish allowance. PATTERN 3 - PLATEN Finish allowance for cast iron; drilled holes; sandpapering small interior concave surfaces. PATTERN 4 - SURFACE-PLATE The name of the parts or members of a casting; the requirements of a casting which determine the molding position of the pattern; draft allowance on cored surfaces; built up patterns; application of the butt-joint; glue, its preparation and use; the size, selection and use of wire brads; leather and wax fillets; the trimmer; the fillet press. Questions on patterns 2, 3 and 4.

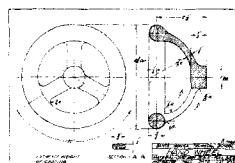
PATTERN 11 - SUPPORT Shaping patterns; finish allowance on the walls of cored holes. CORE-BOX FOR THE SUPPORT PATTERN Shaping the cavity of semicircular core-boxes; arranging the material for core-boxes; roughing out the core cavity upon a saw-bench; the core-box plane; the rabbet-plane; testing with a try-square the accuracy of a semicircular core-box. LAYING OUT PATTERNS PATTERN 12 - LATHE-LEG A pattern layout; pattern construction; band-sawing; application of a templet; what to avoid when operating a bandsaw. Questions on patterns 10, 11-12.

PATTERN 14 - TOOL-REST SLIDE Giving greater strength to a pattern by the arrangement of the core-print; arranging a core-print so as to simplify the construction of the core-box; proportioning a core-print so as to balance a core. CORE-BOX FOR THE TOOL-REST SLIDE Core-frame construction. PATTERN 15 - STEADY-REST Simplifying the parting of a mold by the use of a dry-sand core; registering a core; strengthening a fragile section of a pattern; methods of producing openings in web members of patterns; the compass-saw. CORE-BOX FOR THE STEADY-REST Core-box arrangement and construction....

PATTERN 31 - TOOL-REST Making provision upon the pattern for the mounting of a casting between the centers of the lathe; responsibility of the patternmaker; the dowel-joint; application of counter sawing. MOUNTING THE MATERIAL FOR TURNING PARTED PATTERNS Methods of holding stock together while turning; the pinchdog; the corrugated-fastener; stiffening the material for turning fragile parted patterns....

more. It's all heavily illustrated. There are many pattern books out there, most of so-so quality. This is one of the very best I've seen. And from it you can produce valuable castings for your lathe and model engine, instead of some huge globe valve for an oil pipeline. Great book. If you pour metal, this is definitely something you should have. Melting metal is easy. Casting it is a different matter. Get a copy of this.

5 1/2 x 8 1/2 softcover 296 pages
No. 22059 \$12.95



hand lever for a machine, a crank, a foot pedal, a hand wheel, a pulley, and dozens more.

You'll visit three different foundries to watch molders ram up molds, to see their inventory of stock patterns, and more.

Hall taught in Santa Monica in 1943, and you'll find his book more action than words. Excellent how-to that will help you make better castings. Get one! 8 1/2 x 11 softcover 188 pages

No. 21095

\$14.95

Practical Wood Patternmaking

by J Robert Hall
reprinted by Lindsay Publications

You get 89 lessons that can't all be listed here. Each lesson, or chapter, starts with the words "How to". You'll discover how to sharpen a gouge, measure lumber, use runners and gates, lay out and cut square holes, use leather fillets, use templates, lay out and cut a true round or ball, make cores, make and use face plates, use wing core and wing prints, use babbitt anchors, use balance cores and chaplets in core work, make a medium or large spur-gear pattern, use a cupola and crucible in metal melting, and on and on.

You get a large format book with 89 lessons, wall-to-wall illustrations, including dimensioned drawings of patterns of useful castings such as bearing caps, a

Advanced Patternmaking

reprinted by Lindsay Publications

Patternmaking is probably the most important step in producing high quality castings because minor changes in pattern and fillet shape can radically change the strength of a casting.

"Advanced Patternmaking" gives you dozens of examples demonstrating the techniques of skeleton patterns, green-sand and loam patterns for large pipe bends, patterns and core boxes for globe valves and three-way cocks. You'll see patterns for wheels and gears with four arms, web plates, and six or more arms. You'll see pattern for a shaft is made.

Some of the more interesting examples you'll see are the patterns for steam engines: cylinder head and cover, disk crank, steam chest cover, Corliss engine valve gear and slide-valve engine cylinder. You'll find a stop or throttle valve, special three-way cock, small bell, patterns and core boxes for casting chain, spur gear and rack, miter and bevel gear patterns, worm and worm gears, and hollow arm flywheels.

Finally, the last section will show you such complicated things as patterns for screw propellers and intricate carved patterns for cast iron parlor and cook stoves. Making stove patterns is an incredible skill, and this is the only place I've ever seen it taught.

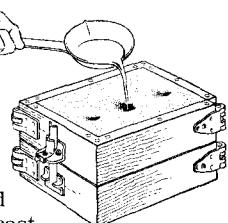
Melting metal is one thing, but turning molten metal into something useful is another. This is a great book with great illustrations! Reasonable price! 5 1/2 x 8 1/2 softcover 144 pages No. 4090

\$9.95

Pewter-Working Instructions and Projects

by Osburn and Walker

Learn all aspects of pewter techniques from beating down and planishing to plaster casting and spinning. Full of valuable metal working techniques. Wall-to-wall detailed drawings. A lot of book for the money. Get one! 5 1/2 x 8 1/2 softcover 160 pp No. 1205



\$7.95

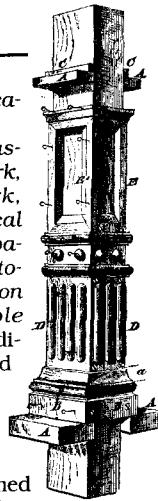
Pattern Maker's Assistant

by Joshua Rose

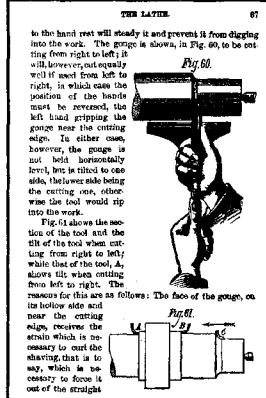
reprinted by Lindsay Publications

"The pattern maker's assistant embracing lathe work, branch work, core work, sweep work and practical gear construction; the preparation and use of tools; together with a large collection of useful and valuable tables..." This is the 3rd edition copyright 1877, printed in 1882. Before Fred Colvin, there was Joshua Rose, another master mechanic and machinist.

You get eighteen unnamed chapters and a large collection of tables. Within the chapters are many brief topics such as how a pattern is molded,



bearing or brass pattern, pattern pegs, hexagon gauge, double-flanged pulley, jointing spokes, core-box for pipe bend, pillow block, square column, ornaments for square column, window sill, thin work, sweeping up a boiler, sweep up and engine



cylinder, gear wheels, construction of pinion, turning screw of worm pattern, cogging, shrinkage of solid cylinders, and much, much more. You also get instruction on all kinds of wood working machines from jig and circular saws to lathes and planers.

You can't make great castings unless you have great patterns. You'll find other valuable pattern making books in this catalog, but this is special because it is from another century and from the other side of the Atlantic (England).

Great book for the foundry man. Wall-to-wall with beautiful engravings. There are other great Rose books that will have to be brought back. This is one of the more appealing. Get a copy. 5 1/2 x 8 1/2 softcover 324 pages No. 21753

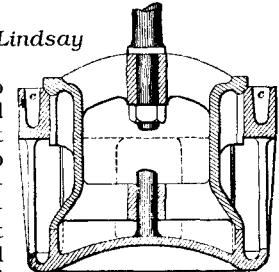
\$14.95

Machinery Pattern Making

by P. S. Dingey

reprinted by Lindsay Publications

It's easier to shape wood than metal. Put your efforts into building a quality wood pattern, and use it to cast the metal part you need for that special machine you're building. Maybe you could even sell castings to other machinists.



You get Dingey's secrets on making patterns for printing press cylinders, flywheels, worm wheels, plug valves, propellers, Corliss engine cylinders and much more. And what is even better, you'll find 417 great engravings to show you how. This is a gem of a how-to book.

If you cast machine parts, get a copy of this. The text is good, but the illustrations are worth the price of the book alone. Make your engines look professional. Save your self-hours of needless machining. And make parts that would be very difficult to fabricate from weldments.

Excellent 1898 book. Order a copy! Recommended. 5x7 softcover 208 pages 417 engravings No. 20390

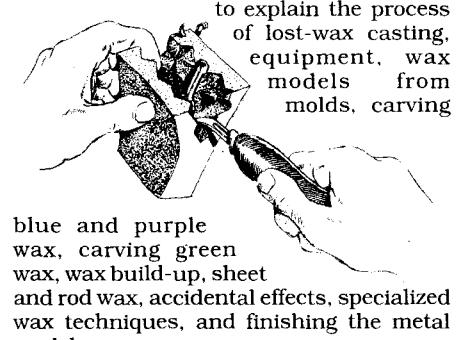
\$8.95

Modeling in Wax for Jewelry & Sculpture

by Lawrence Kallenberg

Lost wax casting is a powerful technique for producing precision metal castings. The author draws on twenty years of experience

to explain the process of lost-wax casting, equipment, wax models from molds, carving

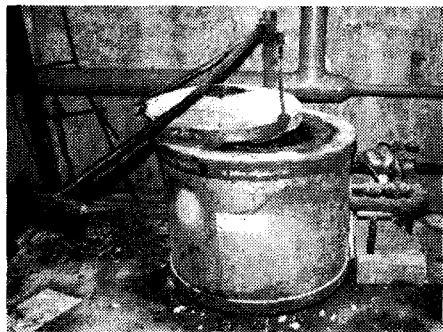


blue and purple wax, carving green wax, wax build-up, sheet and rod wax, accidental effects, specialized wax techniques, and finishing the metal model.

All of this, of course, is designed for making intricate jewelry. You'll learn how to carve stock wax shapes into a diagonal dome ring, or a pendant with stone, a rose pin, and more.

The lessons taught here should help you produce intricate machine parts and works of art. Well illustrated book, nicely written, and although it's a bit expensive, it delivers rare information. Consider it carefully. 7x10 hardcover 252 pages No. 1290

\$32.95



"Lil' Bertha" Electric Furnace

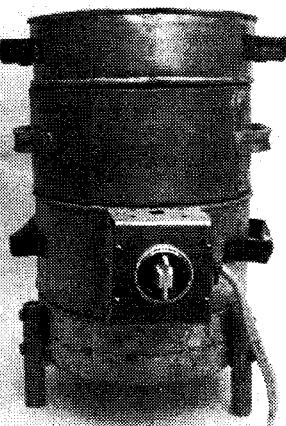
by Dave Gingery

Let Dave show you how to melt aluminum and brass with electricity! If you have good ventilation and are careful, you can melt indoors, rain or shine. Electricity isn't cheap, but it's no more expensive than charcoal, and it's right there in the wall — all you need. Best of all, you can dial up the heat you need on thermostat, put the metal in the crucible, and go ram up your molds. After the metal melts, it will sit there at pouring temperature until you're ready. The furnace will practically watch itself.

You can build this high performance electric furnace that runs at 1800° practically forever for very little money. And it's surprisingly easy.

Not only that, you can use Lil' Bertha to calcine investment molds, carburize and heat treat metal, forge, temper, anneal, enamel, fire ceramics, and many other tasks. If you go to the trouble of getting the harder-to-find high temperature electric element, you can fire at 2300° for extended periods, making this furnace ideal for melting brass!

Dave will show you how to size the furnace to fit your needs, where to get and how to handle crucibles, make the electrical calculations, and more. This is typical Gingery material — top rate wall-to-wall how-to. Order a copy. 5 1/2 x 8 1/2 softcover 67 pages. \$8.95



Adapt it for heat treat, lost wax, roasting possum! Melt metal!

Methods for Modern Sculptors

by Young & Fennell

Turn that sculpture you did of your mother-in-law into a bronze! Put it on the front lawn! Get sued!

Young & Fennell will show you how to turn wax and clay sculptures into finely detailed metal castings. Although the metal of choice here is bronze, the techniques can be applied to other metals. And you get loads of practical casting how-to here from people who do it.

Chapters include waxes and sprues, mold making, ceramic shell casting, dewaxing, the melt and pour, chasing and cleaning, polishing and patination, patinas for metal, conserving and preserving bronze patinas, and more.

You get details on wax working methods, complex spruing, flexible molds, ceramic shell casting procedures, ceramic materials and mixes, dewaxing without a kiln, building a small kiln, building your own furnace, firing the furnace, judging metals, the pour, diagnosing problems in shell casts, removing sprues and vents, final sandblasting, polishing and buffing, patina formulas for all types of metals, removal of patina, slurries and stucco formulas, suppliers, and more.

Great detail. Great how-to. Great illustrations. An excellent book. We've offered this for a number of years now. If you don't have a copy yet, it's time to get one. 5 1/2 x 8 1/2 softcover 294 pages No. 1257 \$16.95



Hardening, Tempering, Annealing and Forging of Steel

by Joseph V. Woodworth

reprinted by Lindsay Publications

One of the great advantages of steel is the machinist's ability to change its hardness simply by heating and cooling the steel in specific ways. You can make steel rock hard and brittle through hardening. You can soften it somewhat and make it less brittle by tempering. And if you want totally soft steel you can anneal it.

This 1907 third edition will show you industrial state of the art as it was then. It

may be old, but the processes haven't changed. And when you see that this book is all how-to and practical recommendations together with great illustrations, you'll understand that this book is worth having.

Especially valuable information on making, hardening and finishing all types of tools, including mills, drills, taps, reamers, dies, countersinks and more. But be careful! This is old technology, and it can be very dangerous if you're not careful.

Get a copy of this helpful and useful book. Put one in your reference library. You'll have it when you need it instead of calling us someday and having us ship a copy by overnight courier at three times the price (if we still have it then). Order a copy today! 5 1/2 x 8 1/2 softcover 288 pages No. 20498 \$9.95

Green Sand Casting Techniques Volume II

with John Dilsaver

Let John Dilsaver (who got his start with Gingery's "Charcoal Foundry") show you three advanced molding techniques for the Rider-Erickson hot air engine using Dave Gingery's patterns. You'll see the casting of the yoke which uses a follower because of its irregular parting line. It's an ingenious solution to a difficult molding problem.

Second, you'll see how the engine cylinder is cast with a hollow interior using a green sand core rather than the usual baked sand core. The secret to this fascinating and time saving technique is the use of a perforated pipe to support the green sand. John makes it look so easy.

And finally, you'll see a number of small engine parts cast in brass using the match plate technique. As it is poured you'll easily see how much hotter brass is compared to molten aluminum. You can almost imagine how much hotter still molten iron would be. You'll hear these people who have poured brass and iron recommend that you start by casting aluminum before moving to the "hot" stuff.

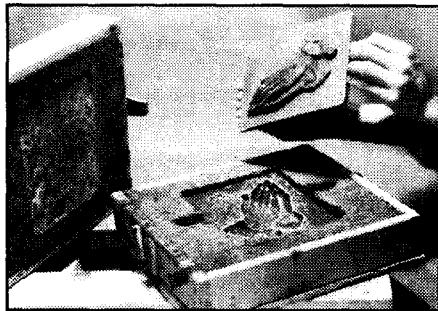
Excellent content is the same high quality as the first. Good quality video. VHS cassette about 40 minutes in length No. 1326 \$29.95



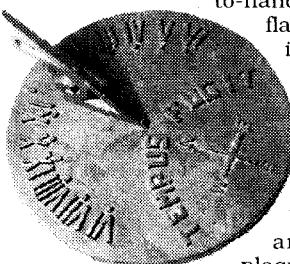
Ornamental Metal Casting

by Robert Whitmoyer

Melting metal and pouring castings is an extremely valuable skill when designing and building machinery. But casting metal can be a whole lot more than that!



Whitmoyer will show you how to take Gingery's charcoal furnace and push it into new areas. You'll learn how to build and operate a charcoal furnace capable of melting 2 1/2 quarts of aluminum. You'll learn how to make a beautifully simple, yet easy-to-handle crucible, flasks, a molding table, and all the other components you'll need.

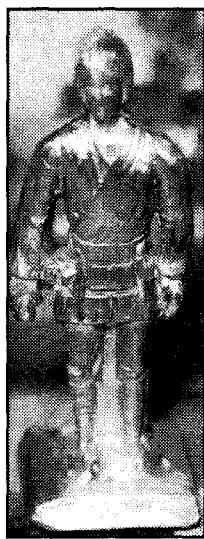


You'll learn how to mold and cast plaques, a sundial, solid figurines, penny bank replicas, and a large fountain that would cost you a fortune to buy.

Cast Objects of Beauty!

One of the strongest points of this book is the info on lost wax casting techniques. You'll learn simple techniques of using plaster-of-Paris to make incredibly detailed castings. Wait until you get a good look at the chess set he cast! Beautiful work!

If you love casting metal, you must get a copy of this. It will round out your abilities and will enable you to cast objects that might be a whole lot easier to sell than something like indexing heads. In other words, the skills here could make you some money on the side. Excellent book! Loaded with photos and drawings. Great how-to! Get a copy! 5 1/2 x 8 1/2 softcover 92 pages



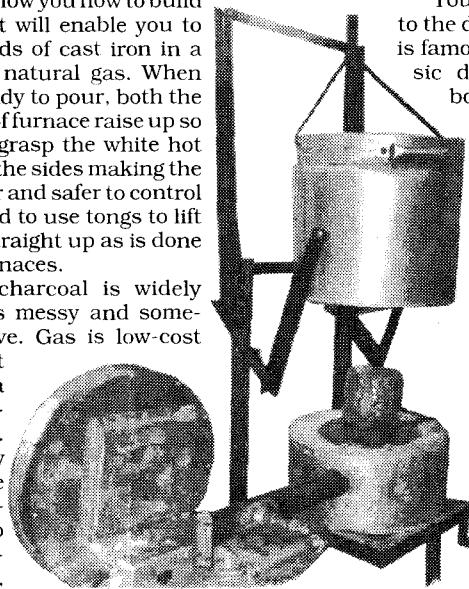
\$9.95

Building a Gas-Fired Crucible Furnace

by Dave Gingery

Dave will show you how to build a furnace that will enable you to melt 20 pounds of cast iron in a crucible with natural gas. When the melt is ready to pour, both the top and body of furnace raise up so that you can grasp the white hot crucible from the sides making the crucible easier and safer to control than if you had to use tongs to lift the crucible straight up as is done with other furnaces.

Although charcoal is widely available, it is messy and somewhat expensive. Gas is low-cost and clean, but requires a more complicated burner. Dave will show you all the tricks, including how to build the centrifugal blower, so that you get a hot, efficient and quiet gas burner.



No. 1281

\$12.95

You get the usual wall-to-wall how-to the detailed information that Dave is famous for. Six chapters cover basic design, building the furnace body, building the frame, building the burner, crucible and tongs, and operating the furnace. You get photographs, drawings and proven techniques.

Melt Iron Safely with This Powerful Gas Furnace

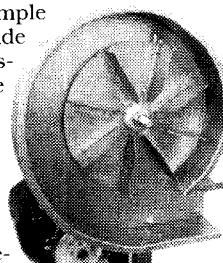
Excellent! You can pour your own cast iron castings, quickly and safely adding a whole new dimension to your machine shop. Get a copy of this. Highest recommendation! 5 1/2 x 8 1/2 softcover 108 pages

How to Design & Build Centrifugal Fans

by Dave Gingery

There are low-cost centrifugal fans available, but rarely will they do exactly what you want them to. If you're building a small furnace to melt aluminum, you can use a surplus fan. If you're going to build a brass or cast iron foundry, you'll probably need more pressure than a make-shift fan can provide. If you're going to build a dust collection system for woodworking tools, a welding booth, or a grinding wheel, you'll find that the blowers you need are not available at low cost.

Dave will show you how to design a fan with simple math that will provide the volume and pressure you need for the system you're building. With a pocket calculator you can figure the dimensions of the fan, the size of motor needed to drive it, and predict performance.



You'll be shown how to use pillow blocks, shafting, plywood, sheet metal and other common materials to build a dirt cheap blower that outperforms any make-do blower you might find on the surplus market.

Dave will also show you how to build a simple manometer and pitot tube. You can actually measure performance and fine tune your air system. Dave used this equipment to build and adjust a powerful gas burner for his iron-melting crucible furnace.

Learn how to build a dust precipitating cyclone, design sheet metal transition pieces (a very valuable skill), balance a dust collec-

Build inexpensive powerful blowers for a variety of uses!

tion system, build a static balancing stand, and more. Gingery's brand of simplified do-it-yourself knowledge is not available anywhere else. Top rate. Order a copy. 5 1/2 x 8 1/2 softcover 112 pages

No. 4600



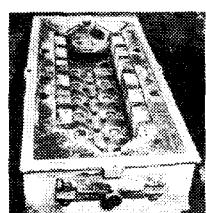
\$9.95

Melting & Casting Aluminum

by Robert J Anderson

You get five chapters (the only really good chapters) from a huge 1925 engineering text covering melting practice, recycling scrap, foundry practice, casting losses and defects, and the production of die castings with permanent molds. You get discussions of fluxes, refractories, ways of evaluating scrap, pouring procedures, measuring pouring temperatures, how to cure porous castings, and much more. You'll find the die casting chapter covers the molds, their use, and troubleshooting. Old, but still, much to learn. Get one. 5 1/2 x 8 1/2 softcover 253 pages

No. 4597

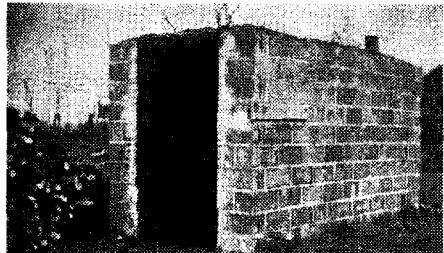


\$9.95

A Charcoal Kiln

MADE OF CINDER-CONCRETE BLOCKS
by A. Richard Olson and Henry W. Hicock
reprinted by Lindsay Publications Inc

These kilns were used by Connecticut farmers fifty years ago to produce 10-20,000



pounds of charcoal each year for curing tobacco. You can use one to turn wood into foundry fuel!

You get complete plans and details for both a one- and two-cord kiln. You get details on materials, the site, foundation, building the coaling chamber, building the top, and building the chimney stove. Then you learn about loading the kiln, firing, coaling, closing and cooling, and finally opening. You get tables showing typical firing times for coaling oak, maple, birch, and other dense woods.

Great booklet! Dirt cheap! Add it to your library today! 5 1/2 x 8 1/2 booklet 30 pages

No. 21060 \$3.95

Manual of Blacksmithing

by John R. Smith
reprinted by Lindsay Publications

From 1902 comes yet another blacksmithing manual. But a glance will convince you that this is noticeably different from other smithing books.

Chapters include forges and appliances, hand tools, drawing down and upsetting, welding and punching, conditions of work; principles of formation; bending and ring making; examples of forged work; cranks, model work, etc.; homemade portable forges, and manipulating steel at the forge.

What makes this special are topics generally not seen in other books. For instance: an illustration of "Elevation of Appliance for Rounding Bolt Heads" and "Apparatus for Lifting Heavy Forgings". You'll see a machine for bending iron strap, and leveling block with screw, a leveling block with bending templet, a jig for producing a bent crankshaft, and details on building two different portable forges including construction details on the two-stage foot-operated bellows, and more.

This book glosses over the basics and throws interesting hardware at you. Great illustrations. If you spend hours at the forge or are preparing to, this is worth having. Get a copy. 4x7 softcover 158 pages

No. 21281 \$9.95

Melting Iron in the Cupola

by J. E. Hurst
reprinted by Lindsay Publications

Excellent 1929 book on industrial sized cupolas.

Chapters include: historical, construction, operation, charging, receivers, combustion, tuyeres, special, blowers, linings, and more. Learn preparation of the cupola, chipping out, daubing, making up the bottom, the tap hole, the fettling breast and slag hole, the tapping spout, charging the cupola, the bed coke, and much more.

A lot of this equipment is too large for the average hobbyist, although the 10" cupolas described are usable.

This won't show you how to build a cupola step-by-step. But you'll learn how the pros used them. Excellent book. I think you'll like it. 5 1/2 x 8 1/2 softcover 220 pages

No. 21028 \$9.95

Practical Blacksmithing

compiled and edited by M. T. Richardson.

In the early 1890's Richardson collected articles contributed to *THE BLACKSMITH AND WHEEL-WRIGHT* and turned them into four books. Here you get a complete reprint of all four volumes compressed into two books.

"Here are the first two... begins with an account of the tools and equipment of blacksmithing and continues with profuse illustrations, shop plans, and diagrams demonstrating various smithing techniques and discussions of iron and steel. Finally, there are the detailed, yet simple, practical descriptions of smithing's central processes, including drilling, fullering and swaging.

"...Principally, Vols. III and IV guide the reader through more practical descriptions of the central smithing processes, covering welding, brazing, soldering, forging, cutting, bending, setting and tempering. This book will be of particular interest to those working on carriages, as it includes information on how to work with

Complete Handbook of Sand Casting

by CW Ammen

The ol' sandcrab Ammen will show you how to ram up sand molds so you can produce great castings. Learn about all the tools, techniques, hints and tips. Great basic intro. Read this, and then you'll want the more detailed info revealed in the other books in this catalog. In print since '79. Popular book. Get one. 5 1/2 x 8 1/2 softcover 238 pages

\$15.95

Brass Founding

Secrets of making brass castings from 1903. Details on furnaces, care of crucibles, deoxidizing, alloys, and more. Build one of the Gingery furnaces, steal your neighbor's sillcocks, and melt 'em down. Great booklet.

5 1/2 x 8 1/2 booklet 39 pages

No. 868 \$4.00

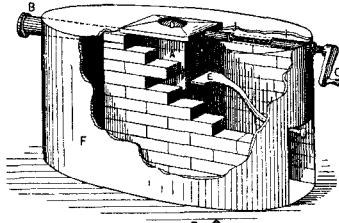


FIG. 49.—SHOWS POSITION OF "J. T. B.'S" TUYSER ON THE FORGE.

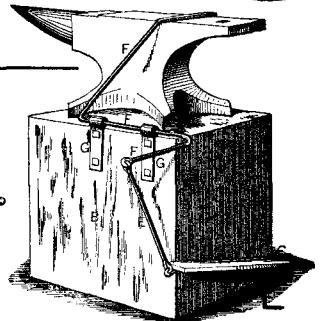


FIG. 58.—DEVICE FOR HOLDING WORK ON THE ANVIL.

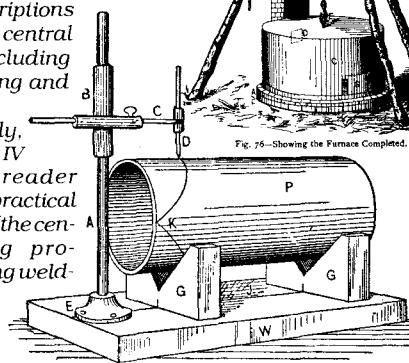


Fig. 160—Handy Tool for Marking Joints.

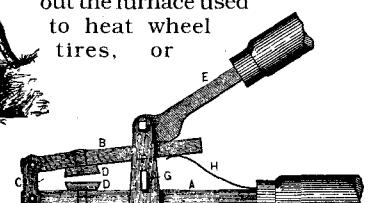


Fig. 27—Side View of Bolt Clipper made by "C. N. S."

how to make a weld on a heavy shaft, or how to make a drill press. Wall-to-wall unusual information. A real historical treat. Expensive, but it delivers. Consider it. two volume set: 5 1/2 x 8 1/2 softcover over 1000 pages total

No. 933

\$51.95

The Cupola Furnace

by Edward Kirk
reprinted by Lindsay Publications

Ol' cupola fanatic, Stewart Marshall, will tell you this is the iron caster's Bible. Cupolas are easy to build. Take a couple of pails or small barrels and weld them together. Then line them with fire clay. Load with coke, iron, flux and turn on the blast. In minutes you'll have more cast iron than you'll know what to do with.

You'll come away from the experience hot, dirty, and tired, but deeply satisfied. And with a thousand questions. Most of those questions Kirk

can answer in this third edition of his classic text from 1910.

Chapters include the cupola furnace, improvements in cupolas, constructing a cupola, cupola tuyeres, cupola management, modern cupolas, large cupolas, small cupolas, examples of bad melting, hot-blast cupola, freezing the blast, cupola fuels (yes, you CAN melt with charcoal), fluxing of iron in cupolas, what a

cupola will melt (no mention of your mother-in-law's gold teeth or cast-iron heart), art in melting, the cupola accounts (how to make money), explosion of molten iron, getting up cupola stock, running continuous stream, number of men required to man a cupola, scientifically designed cupolas, cupola straps, blast pipes and blast, blowers, and foundry tramrail.

Too much work for you? Naw! In chapter 20 you will read "one man does all the work for a 2 1/2-ton melt, 3 tons being the limit. He repairs his cupola, taps out wheels and weighs the iron, limestone and coke, wheels out the sprues and charges all of the material in the cupola".

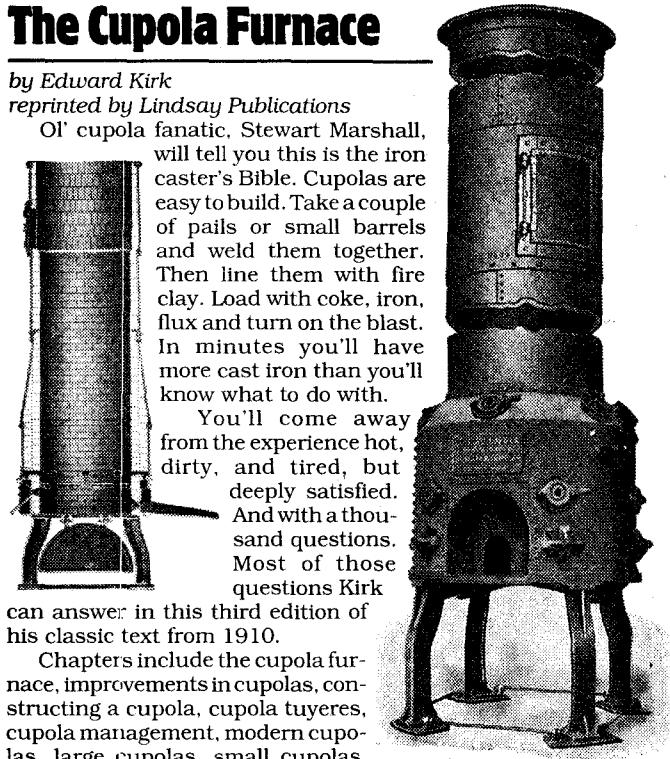
I'll have to agree with Stewart Marshall, this is one great practical cupola book (and I've seen a few...). With Marshall's book of modern practical advice, and Kirk's experience from almost a century ago, you, too, can master an ancient art and pour castiron. Great book. Get a copy! 5 1/2 x 8 1/2 hardcover 459 pages

No. 22199

\$28.95

Cupola Jock, Stewart Marshall, Recommends...

Lindsay's beautiful new hard-bound reprint of Edward Kirk's *THE CUPOLA FURNACE* is hands-down the finest historical book on old time cupolas that exists. It covers, in almost 500 pages, every aspect of cupola construction and operation at the turn of the century, and is copiously illustrated. If you get any book on cupola history and construction (besides mine, of course!), get this one!



Building Small Cupola Furnaces

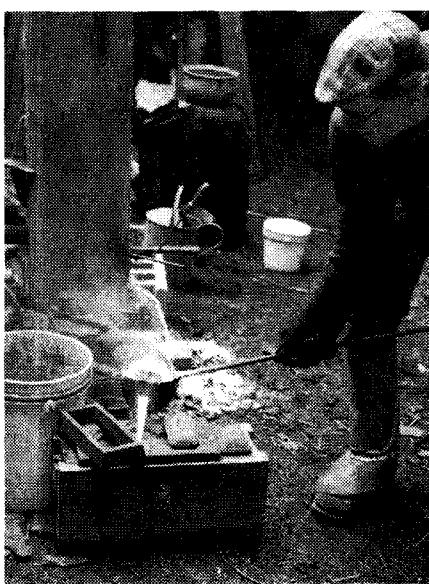
by Stewart Marshall

"A book on home metal casting and building your own foundry."

Now here's an excellent self-published book about melting iron in a cupola. It's a bit on the expensive side, but Marshall knows what he's talking about. And the book is worth every bit the price if you're serious about melting iron. It's one of the best I've seen.

I picked this up off his web site (<http://www.rockisland.com/~marshall/>) —

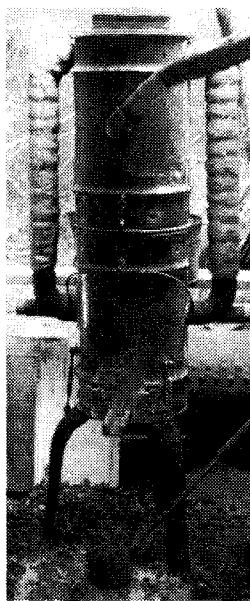
"We have three cupola furnaces of various sizes, the largest being 10 inch bore. Our smaller 7 in. bore fur-



nace is fitted with wheels and is completely portable. Cupolas are continuous melters, with the charges of metal melted in layers alternating with layers of replacement fuel, usually coke. There are no expensive crucibles to worry with. The molten metal is accumulated in the base of the furnace and tapped into homemade ladles as needed. The 10 inch Marshall furnace is capable of approx. 20 to 25 lbs. of grey iron every 5 minutes or about 40 to 45 lbs. of bronze every 6 minutes. Heats of upwards of two hours are possible, so it is obvious that these furnaces are capable of producing vast amounts of metal for their size and cost. The 10 inch furnace costs less than \$200. US to build and the blast can be provided by a large shop vac. One man can easily operate it alone."



These photos are NOT from the book

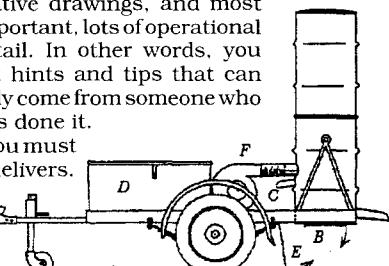


MELT IRON! Low-cost, small, high yield furnaces!

How does he do it? The details are here. Chapters include history and basic construction, building small cupolas, operation of small cupolas, ideas and suggestions, building a larger 13" cupola, and additional thoughts.

There are no photos, but lots of informative drawings, and most important, lots of operational detail. In other words, you get hints and tips that can only come from someone who has done it.

If you want to melt iron, you must have this. Expensive, but it delivers. Get one! 8 1/2 x 11 wire spiral binding 100 pages No. 1442 \$25.00



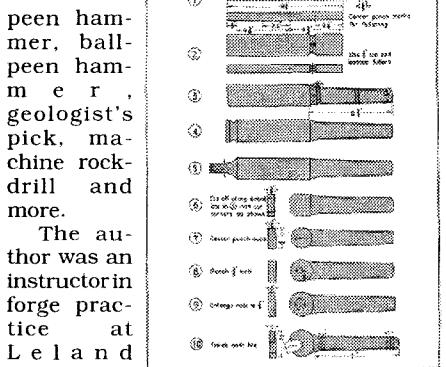
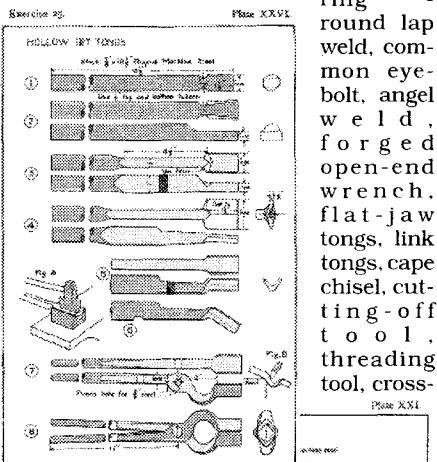
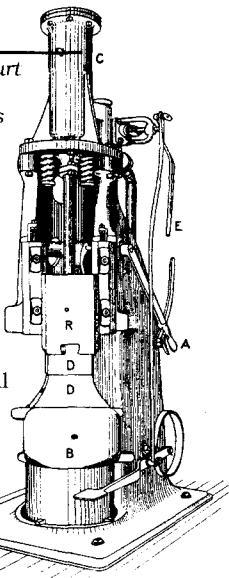
Elementary Forge Practice

by Robert H. Harcourt
reprinted by Lindsay Publications Inc

Yes, another blacksmithing book. From 1917. And it's a good one.

Chapters include materials and equipment; drawing-out, bending and twisting; common welds, special welds; hammer work; annealing, hardening, and tempering steel; and tool forging.

There are no photographs, but there are detailed drawings illustrating 42 different exercises which include s-hook, beam strap, twisted gate-hook, practice welds - fagot,



The author was an instructor in forge practice at Leland Stanford Junior University. This was the textbook he used to teach blacksmithing. It's brief, to the point, and informative.

Yes, it covers some of the same materials as other smithing books, but every book is slightly different. Excellent. Consider it. 5x7 softcover 148 pages

No. 21699 \$8.95

Forge Work

by William L. Ilgen
reprinted by Lindsay Publications

Ilgen taught at Crane Technical High School in Chicago in 1912 and produced this gem of a blacksmithing textbook.

Chapters include: tools and appliances, forging operations, practice exercises, treatment of tool steel, tool making and stock calculation, steam hammers, art smithing and scrollwork, preparation and smelting of iron ore, manufacture of iron and steel, and formulas and tables.

You'll learn about the straight peen hammer, chisel tongs, the hot cutter, the flatter, the heading tool, swage block and so on. Then you'll learn hammer blows, upsetting, twisting, butt welding, and the other necessary smithing skills. For practice you'll make a draw spike, gate hook, square-corned angle, welded ring, chain swivel and so on.

You'll learn annealing, hardening and tempering, use of the steam power hammer, circular cutter, trimming chisel, spring fullers, and more. Learn the basics of decorative iron work. Make an Jardiniere stand, umbrella stand, andirons and more.

Excellent book! Lots of drawings and a number of interesting, but somewhat "muddy," photos. A book worth having. Get one! 5 1/2 x 8 1/2 softcover 210 pages

No. 21206 \$9.95

Brass Hints & Tips

reprinted by Lindsay Publications

From American Machinist in the 1880's and 1890's. Articles on casting and machining brass: Working brass such as jigs for holding brass bearings while facing off in a milling machine, a jig for winding brass springs, internal threading tools for making nuts, and more. Three different articles will show you how to design and build furnaces to melt brass. Many unusual century-old illustrations. Excellent. Order a copy! 5 1/2 x 8 1/2 booklet 16 pages

No. 849 \$3.00

Bent Iron Work

by Paul N. Hasluck
reprinted by Lindsay Publications Inc

Some of this appeared Hasluck's "Metal Working" described elsewhere in this catalog, but you get much more here.

Consider this light blacksmithing. You don't need heat, but you do need a bench anvil, hammers, pliers, and other sturdy tools to turn iron strap into fancy lamp brackets, vase stands, candlestick brackets, unusual picture frames, fancy grills, fire screens for your fireplace and much more. Fastening is done with simple clamps and rivets.

Chapters include tools and materials; bending and working strip iron; simple exercises in bent iron; floral ornaments for bent iron work; candlesticks; hall lanterns; screens, grilles, etc; table lamps; suspended lamps and flower bowls; photograph frames; newspaper rack; floor lamps; and miscellaneous examples.

Hasluck was a Brit, so the projects he shows are British in design. You'll see drawings of grilles and screens from Winchester and Chichester Cathedrals, and Westminster Abbey. You might want to copy them. Classic, beautiful stuff.

Small book from 1903. We enlarged it somewhat to fill the page, and so we old codgers can read it more easily. Loaded with great how-to. I've got a copy here waiting for you. 5 1/2 x 8 1/2 softcover 160 pages

No. 21842 \$9.95

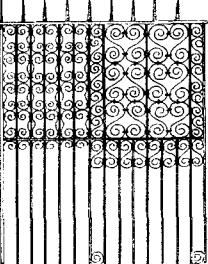
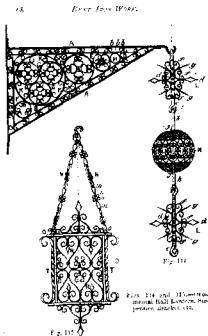
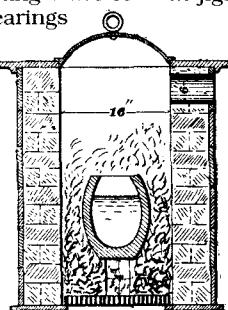


Fig. 114 and 115. Ornamental scroll work, plate 115, 116



Cast Small Metal and Rubber Parts

by CW Ammen

In the first half you get much same info on melting metal found in our other books: furnaces, crucibles, molds, etc. The second half covers casting rubber to make replicas of pads, bumpers, weather-stripping and the like. Great from auto restorers I would imagine. Well illustrated. Great intro. 5 1/2 x 8 1/2 softcover 163 pages

No. 117 \$14.95

Elementary Wrought Iron

by J. W. Bollinger

reprinted by Lindsay Publications

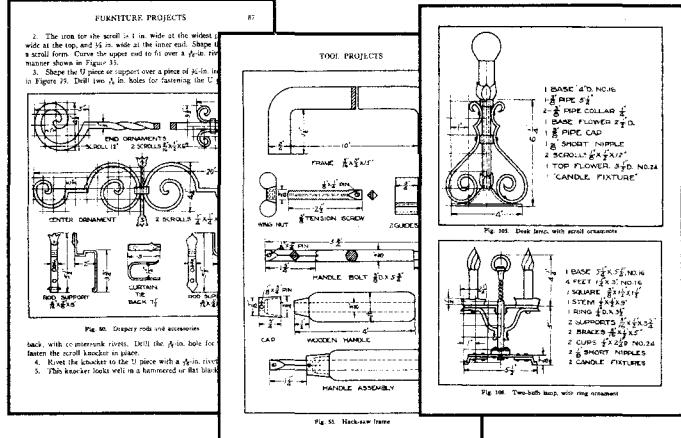
In 1930 Bollinger was a teacher at Theodore Roosevelt Junior High School in Tulsa, and his goal was to teach young people to work iron. His book, this small jam-packed manual, is a gem. You get straight-to-the-point step-by-step how-to that is well illustrated.

You get four parts: introduction, materials and tools, operations, and projects. Most of the book is dedicated to the last two sections. Within operations, you'll learn about building a forge fire, measuring and laying off, cutting tapering, upsetting, flaring, twisting, making bends over the anvil, shaping an eye, shaping a ring, drilling, riveting, threading, brazing, hardening tool steel, finishes and much more.

Projects are broken into

TOOLS: marking gauge, depth gauge, ice scraper, hacksaw frame, ice tongs, and more.

ARTICLES OF FURNITURE & MISC: portable camp fire grate, telephone table, magazine basket, door knocker, fern stand,



aquarium stand, kitchen stool, and more.

ANDIRONS AND FIREPLACE ACCESSORIES: rings design, gooseneck design, twisted design, poker, shovel, fender and more.

CANDLESTICKS: tulip design, single candlestick, two arm candlestick - twisted design, three-arm candlestick with heart ornaments and more.

LAMPS: desk lamp, two-bulb lamp, table lamp with four leaf cluster ornament, bridge lamp with prism ornament, bridge lamp with scroll designs bridge, and more.

FILLER-INS: bill file, paper weight, good-luck horseshoe, and more.

The term wrought iron in the title of this book refers to a craft rather than to a type of metal. And Bollinger really does a great job in providing projects for those who want to beat metal with a hammer. Great illustrated how-to. Get a copy. 5 1/2 x 8 1/2 softcover 139 pages

No. 22105

\$11.95

Do You Want To Receive Future Catalogs?

Because of the enormous expense of printing and mailing catalogs, we are forced to mail catalogs to only those people who are interested in receiving them. The best and only sure-fire way you can be assured of getting future catalogs is to order books. And that makes sense. If you can't find at least ONE book in this catalog that interests you enough to order, then there's little reason to continue sending catalogs. So order today and we'll send catalogs!

The Complete Modern Blacksmith

by Alexander G Weygers

Years ago I offered Weyger's *The Making of Tools, The Modern Blacksmith, and The Recycling, Use, & Repair of Tools*. They first appeared in the early 70's at about \$7 each. Now a new publisher has reprinted all three in a single volume at a price lower than that of twenty years ago. What a bargain!

Any one of his books is a joy: loaded with practical easy-to-read how-to text with countless beautifully drawn illustrations in the margins (by the author himself). You'll learn how to do everything from the make the chisels you'll need to carve that marble bust of your mother-in-law to getting that old metal lathe that you pulled out of the bottom of the river going again. Weygers doesn't just tell you, he shows you.

Check out the sample illustrations here. Go over the contents. If you don't have a copy of this in your library, you're a certified bonehead in my book. This is an incredible bargain. It doesn't get much better than this. Order a copy. Now! 8 1/2 x 11 paperback 300 pages No. 1432



\$19.95

Contents -

- Tempering Steel • Making A Fireplace Shovel
- Making A Small Anvil From A Railroad Rail • The Power Hammer • How To Repair Broken Garden Tools • Making A Charcoal Brazier And Screening Scoop • A Candlestick • Making Tool Handle Ferrules And Shoulders • A Pump To Recycle Waste Water • How To Make A Wood-Turning Lathe And Lathe Tools • Tempering High-Carbon Steel • Making Carbon-Tipped Tools For Wood And Metal-Turning Lathes • How To Drill Square Holes • Making Hand-Held Punches • Christmas Tree Candle Holders And Decorations • Making Design Layouts For Punches • How To Make Miniature Chisels And Punches • A Punch To Cut Small Washers From A Metal Strip • Makeshift Bearings • Making Accessory Tools For The Wood-Turning Lathe • Wire-Straightening Tools • Files, Rasps And Grindstones • The Reverse Lathe • How To Recycle And Operate A Metal-Turning Lathe • The Trip-Hammer And Its Use • Making A Pair Of Insets To Forge A Gouge Blade • Making Trip-Hammer Insets From Trolley Rail • Trip-Hammer Upsetting • Insets Mad From Car Axle Flange Endings • Sharpening Tool Edges

The Handcrafted Folding Knife

by Mark K Malmros

The author will show you how to make a folding lockback knife with a carbon steel blade using simple hand tools. This is for beginners like you and me and not advanced bladesmiths.

The Hand-crafted Folding Knife

Making a lockback knife with simple hand tools



Mark K Malmros

Malmros will expose you to the necessary materials, and give you patterns for a field and stream fillet knife, the gentleman's lockback, and the Indian folder. Next, you'll cut the parts from steel and brass with a hacksaw, finishing them up with a file and sandpaper. You'll heat treat the blade with a propane torch and assemble the parts.

Chapters include introduction; design; materials; cutting and filing the patterns; taper, slot & etch; the handle; assembling the knife; four appendices on heat treating, budget drill press, electrochemical etching, and exotic hardwoods; resources; bibliography; and patterns.

I wish I could find more books of this quality. I think you'll like it. 6x9 softcover 112 pages

No. 1399

\$14.95

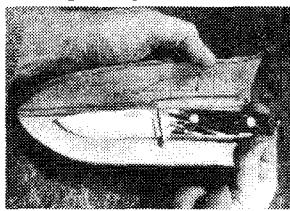
How to Make Knives

by Barney & Loveless

"...we have written this book as a textbook for readers who intend to buy tools and materials... we have fully described the two major ways of making knives, as practiced by two full-time knifemakers..."

"...we have discussed both the tools and materials of knifemaking very carefully in the hope that this part of the book will be most useful to the beginning worker..."

Finally, we have included a complete listing of the equipment and materials sources known to us..."



Chapters include: history of handmade knives, safety, making a knife by stock removal, make a sheath, making a knife at the Moran forge, alternate sheath making method, how to make a knife with hand tools, flat grinding, soldering the guard, solderless guard, hidden tang, applying scale handles, mirror polishing, tools, materials, knife design, and sources.

Great book! Wall-to-wall photographs. Good one. 8 1/2 x 11 softcover 182 pages

No. 1401

\$13.95

The Pattern Welded Blade

by Jim Hrisoulas

From the dust jacket:

"A well-forged, perfectly welded laminated blade is a testament to the bladesmith's ability and patience. More than simply layered and twisted steel and iron, a patternwelded blade reflects the care and craftsmanship of its maker. In *The Pattern-Welded Blade*, master bladesmith Jim Hrisoulas walks the experienced smith through the steps of creating the customary patterns of varying complexities all the way up to "undiscovered" designs waiting in the depths of the maker's own imagination.



Besides providing indepth instruction in the creation of many basic and composite patterns, Hrisoulas explains the intricacies of welding in coal and gas forges, methods to improve flux for a better weld, secrets of working with welded cable, and tips for grinding, heat treating, tempering, and finishing the blade. Clear illustrations, beautiful photographs, and an appendix of weights, measures, and compounds round out this complete course in advanced bladesmithing.

Jim Hrisoulas is a master bladesmith with more than twenty years' forging experience. He specializes in medieval broadswords and daggers and Damascus pattern-welding. He is the author of *The Complete Bladesmith* and *The Master Bladesmith* and the on-screen instructor in *Forging Damascus: How to Create Pattern-Welded Blades*.

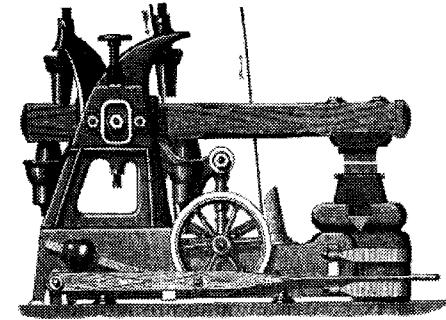
Chapters include the workshop, materials, forge welding, basic patterns for pattern-welded steel, the composite patterns, welded cable, grinding the blade, heat treating and tempering, finishing, and more.

Making pattern-welded steel is craft of unusual beauty. Although the ancients' top priority was superior blades, here the pattern is top priority. The author will show you how make blades that will amaze your friends.

Expensive book, but excellent. Delivers specialized info you won't find just anywhere. Get a copy. 8 1/2 x 11 hardcover 113 pages

No. 1390

\$35.00



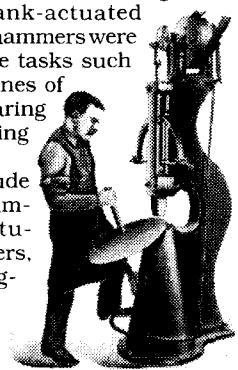
Pounding Out Profits

by Douglas Freund

Talk about a specialized book! "The development and manufacture of crank-actuated open-die power forging hammers."

To take some of the hard work out of smithing, steam hammers were first used back in the early 1800's. Then trip hammers came into use, but were gradually replaced by crank-actuated hammers. These hammers were used for repetitive tasks such as drawing out tines of hay forks, preparing file blanks or forging cutlery.

Chapters include atmospheric hammers, crank-actuated helve hammers, vertically configured guided-ram hammers, non-vertically-configured guided-ram hammers, and more.



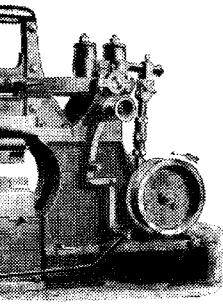
Essentially you get a well-illustrated detailed history of these early production machines that are now used by artists in metal. It's all nitty-gritty details and engravings.

What vicious machines!

Looks like a

great way to lose a finger or whole hand, along with your hearing. Maybe you can build one (full-size or miniature) or restore one. Use it to threaten the paper boy the next time your paper ends up in the tree. Naw... you'd probably get arrested. (But that's usually a sign of success for a Lindsay). Good book for serious blacksmiths. 6x9 hardcover 317 pages

No. 1479



\$37.95

How to Build a Forge

by Dave Wimberley

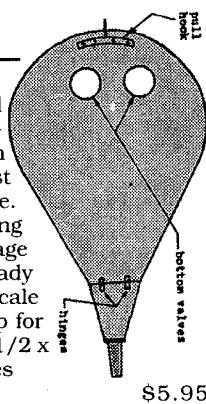
Build a 20" firebrick-lined forge that uses standard plumbing fixtures to bring in the air blast. The major raw materials include an old water heater and a vacuum cleaner. The only special tool you'll need is an abrasive cutoff saw. Excellent drawings and photos. Build one! 5 1/2 x 8 1/2 booklet 15 pages No. 845

\$4.95

Make a Blacksmith Bellows

by Robert Heath

Complete detailed plans for a large commercial bellows built in 1910 to provide blast for a blacksmith's forge. This mutha is over 5' long and includes a storage chamber to provide steady air flow. Great plans. Scale it down. Or scale it up for your blast furnace! 5 1/2 x 8 1/2 booklet 26 pages No. 1249



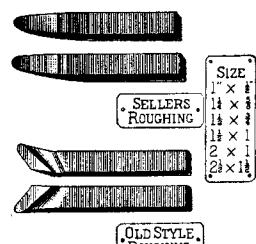
\$5.95

Tool Dressing

reprinted by Lindsay Publications

This 1906 discussion starts by discussing high-carbon steel, alloys, blister, shear and crucible steel used in razors, saws, spindles, chisels and so on. Next, you make a wedge-shaped specimen piece, harden it, and then temper it.

Of special interest in this publication are the instructions on forging, hardening and tempering a cold chisel, and then doing the same for a cape chisel and a 5 3/4" cross-peen hammer. You'll learn how to make a diamond-pointed lathe tool, a right-hand side lathe tool, and a boring tool. Next, you'll find instructions on making stone chisels, a special hardie for stone drills, dressing stone drills, dressing marble turning tools, on making a flat spring, welding tool steel, making flat drills, and on hardening and tempering high-speed steel.



\$3.95

Great for blacksmiths and machinists. Excellent illustrations & easy-to-read text. Get a copy. 5 1/2 x 8 1/2 booklet 36 pages No. 20773

Blacksmith Shop and Iron Forging

reprinted by

Lindsay Publications

Blacksmithing is the forging of iron with simple tools — the same forging process carried on today with enormous presses and dies. But have you ever made a bolt head by welding on a ring? Have you made a rocker arm? How about a steam locomotive reverse shaft? Or a rudder frame?

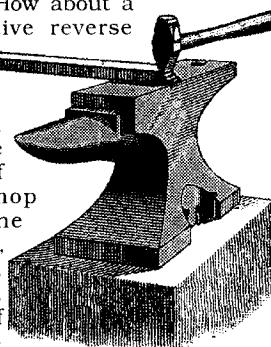
Besides these rare topics, you get a complete discussion of blacksmith shop equipment: the forge, tuyeres, bellows, hood, chimney, fuels, anvil, all types of hammers, chis-

els, and all the rest.

The second part will teach you about the making of cast and wrought iron and basic operations of forging. You'll make an eye hanger, gate hook, and other educational projects. You'll learn how to weld and make a small chain and tongs.

This 1906 technical school textbook will teach you both the basics and new tricks. Excellent book. Great illustrations! Inexpensive! Order a copy today. 5 1/2 x 8 1/2 softcover 96 pages No. 4074

\$7.50



Forgecraft

by Charles Philip Crowe

reprinted by

Lindsay Publications Inc

Charles Crowe of Ohio State University has returned from 1913 to teach us how us the fundamentals of working iron, of being a blacksmith, and of being an artist in iron.

Chapters include the forge, tools, materials used, formed work, hooks and chains, welding, special welds, heat treatment, tool smithing, hardening and carbonizing, tempering and an additional chapter on metallurgy.

You'll learn the basics of bending and welding stock into rings, drawing tapers, forging a corner, and much more. You'll find these same lessons in other books, but



here you get action photos taken with the work on the anvil. You'll learn what constitutes the design of a good hand forged chain hook and how to make it. You'll see how unusual welds are used in a forged swivel, a hook with eye, a square socket wrench and more. Study the photos and watch two professional blacksmiths forge a cutting tool for a large lathe. That's something to see.

Numerous photos, samples of unusual pieces of work, and the professional tone of the text are the strengths of this book. Excellent. I had no doubts about reprinting it when I first saw it. Get a copy. 5 1/2 x 8 1/2 softcover 175 pages No. 21087

\$9.95

A Course in Basic and Intermediate Blacksmithing

A Blacksmithing Primer

by Randy McDaniel

Oh, no! Not another blacksmithing book!

Yes. Another. And a good one. A brand new one by someone who not only can forge the black metal but can produce an attractive book as well describing in detail the secrets.

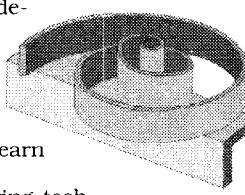
In this spiral bound book you get small, illustrated, detailed sections describing the forge, laying out the fire and heating the metal. And you'll learn about the tools, of course.

Then you'll discover hammering techniques, making wall hooks, slit chisel, a hardie, a strap hinge, spade end leaf end, the pintel, and more. You'll make a variety

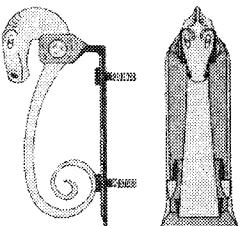
of tongs, nails, a variety of scrolls and collars, animal heads, and more. You'll learn a variety of forge welding techniques including the T-weld, L-weld, bird's mouth weld, and more. And you get info on schools, organizations, internet sources, a color tempering chart, plans for a forge, a homemade anvil, and more.

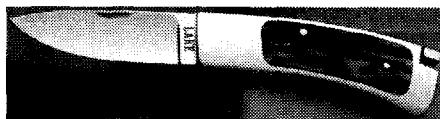
The author tells me these sell rapidly at any blacksmith's meet where he sets up his table. And I believe him. It's worth its price. If you pound iron, or plan to, this is certainly worth having. He does great iron work, and surprisingly good publishing. Consider this carefully. 8 1/2 x 10 spiral bound 174 pages No. 1467

\$20.00



The RAM Hinge





How to Make Folding Knives

A Step-by-Step How-To

by Lake, Centofante and Clay

Ooooh! What beautiful "pocket" knives! But these aren't knives I'd put in my pocket. I'd put them on display. They are as sleek, polished and perfect as any knife you will ever see. And three different craftsmen will show you how they do it in this wall-to-wall

picture book.

No, this isn't about brute-force-and-ignorance blacksmithing. These guys are artists. And they use a variety of machine tools: drill press, milling machine, buffing

wheels, pantograph engravers, etc.

They will show you the equipment they use, how to design, make the backspring, fitting, milling liners, building handles, grinding blade bevels, hand-honing, silver-soldering, and more. You get a picture gallery of old knives, knives by the world's best builders, and a source of suppliers.

This is definitely a step above changing the wheel bearings in your '74 Fairlane. If you want to build something that people will ooh-and-aah over, junk the Fairlane and build a knife.

Excellent book. Wall-to-wall photos, but the detailed photos are somewhat low in contrast. (Maybe the ink is light on my copy. Dunno...) Secrets of craftsmen.

8 1/2 x 11 softcover 190 pages
No. 1456 \$13.95

Step-by-Step Knifemaking

by David Boye

A classic text on making texts that has been around since 1977. Learn about cutting, grinding, heat treating, making handles, sharpening, making sheaths, acid etching and more. Heavily illustrated. Excellent detailed intro to this art form!



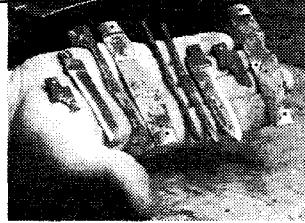
7 1/2 x 9 softcover 270 pages
No. 115 \$16.95

The Complete Book of Pocketknife Repair

by Ben Kelley

Ya say you busted your pocketknife cleaning the grease out from under your toe nails? Well what were you doin'? Lubricating the fifth wheel on your Peterbuilt with your feet? Here's how you can fix the knife, but I don't what you'll do about the greasy toenails.

Chapters include bench tools, power tools, knife repair, polishing and buffing, blade restoration, handle repair, jiggling and dying bone handles, keyhole construction, heat treating hints, materials for pock-



etknife repair, care and maintenance, how to sharpen a knife, general information, replacing a blade and parts of the knife.

Kelley has in past lives has assembled aircraft and has been a tool maker in addition to being a pocket knife collector. Here, in this heavily illustrated volume, he'll show you the tricks to repairing knives as well as restoration. Loaded with useful information. Get a copy. 6x9 paperback 130 pages
No. 1438 \$10.95

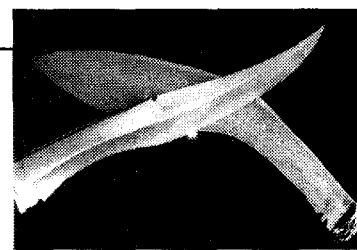
The Master Bladesmith

by Jim Hrisoulas

...Hrisoulas divulges the secrets that for centuries have been jealously guarded by the bladesmithing guilds. Now you too can learn how to turn out swords, axes, spears, patternwelded blades, and other knives... Master the use of exotic materials such as ivory, amber, sharkskin, mokume gane, gold, silver, and other precious stones, as well as how to use exotic patterns, techniques, and designs on more common leather, bone, and woods to turn ordinary blades into extraordinary tools and weapons.

Knowing which steel to use for which blades. Knowing when to use the richer alloys and when to stick with carbon steels. Knowing how to use stainless steel for knives that will outcut any super alloy. Knowing how to make Damascus steel even more beautiful. Knowing what kind of forge and inside atmosphere to use with different blades and how to construct your own....

Chapters include setting up the workshop, steels & alloys, advanced forging



techniques, the power hammer, heat treating and tempering, hilts, metal and wood finishing, leather working & scabbard making, swordmaking: the romance of the sword, the spear: the ancient weapon of choice, axes, Japanese nonferrous alloys and their coloration, Damascus steel: the patternwelded blade, compounds and formulas, and weights and measures.

If you want to take blacksmithing into the world of fine art, this is a place to start. Big book, expensive but worth it. The blade fanatics already have a copy. You need one, too? 8 1/2 x 11 hardcover 286 pages
No. 1391 \$45.00

HOW TO BUILD A

Full Size Coal Forge from Commonly Available Metal

by Don Meador

Meador describes his own book this way:

"Some forge plans now available use scrounged parts such as an old brake drum. The coal forge in this book uses all new plans which are much easier to come by than scrounged parts, and it still will cost considerably less than a manufactured forge of equal quality.

This design uses commonly available angle iron, sheet metal, nuts, and bolts. The project requires simple hand tools with the exception of something to cut the angle iron, but a chop box could be rented or the Mighty Metal Miter could be built. All the pieces are assembled with nuts and bolts. Since welding is not required, the coal forge is a good project for either seasoned or beginning blacksmiths.

Even though the book is mostly on how to construct the forge shown on the cover, details of how the dimensions were deter-

mined are discussed so that the plans can be modified for anyone's particular needs. The wheels can be easily removed for the classic look. Not only do the plans describe the construction of a forge, but they include the plans for making a smoke hood from a flat piece of sheet metal."



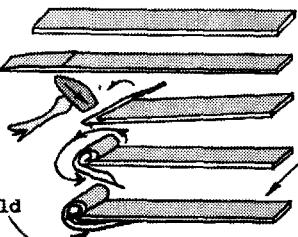
Decent plans at a reasonable price. Get a copy and forge up an 8" diameter steel ring for your pierced navel. Or make horse-shoes for your camel. Or whatever. Good plans. 8 1/2 x 11 booklet 36 pages illustrated
No. 1478 \$9.95

How To Forge Weld on a Blacksmith's Anvil

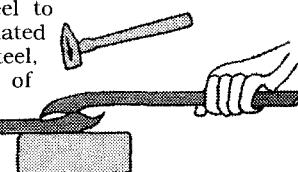
by Robert M Heath

A necessary skill for the master blacksmith.

Health will walk you through the theory and the practical techniques. You'll learn how to flux, how to recognize the signs of iron hot enough to weld, how to "pop the weld", how to use the "wet look method" and more. You'll learn to prepare scarfs to make a strong lap weld, the secrets of welding layers of steel to achieve simulated Damascus steel, scarf layers of



flux, how to recognize the signs of iron hot enough to weld, how to "pop the weld", how to use the "wet look method" and more. You'll learn to prepare scarfs to make a strong lap weld, the secrets of welding layers of steel to achieve simulated Damascus steel, scarf layers of



steel before welding them into a billet, and more.

Info taken from his book *Quest for the Indian Trade Gun* and expanded to become this great booklet. If working the black metal is your first love, consider this by all means. 8 1/2 x 11 booklet 52 pages

No. 1378

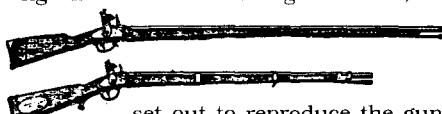
\$9.95

Quest for the Indian Trade Gun

by Robert M Heath

"I am a civil engineer with the Mississippi DOT and have hobbies of archaeology and blacksmithing... We used to visit with the archaeologists from Harvard who were down here digging up Indian mounds..."

Heath was not only interested in the English and French trade guns found, he



set out to reproduce the gun barrels using the blacksmithing techniques that made them.

Here you get a book handmade by the author himself. It's typewritten, and the binding is side-sewn by hand. You get history of iron smelting, discussion of crystal structure, hardening and tempering, forge welding, barrelmaking in the last third of the book, and much more. There are no photographs, but you do get many illustrations. And you get details, details, details.

This is NOT a how-to manual. You will NOT be shown how to build firearms. Again, this is not "slick". It is obscure, hard-to-find publication at a reasonable price. Worth having. 8 1/2 x 11 side-sewn 269+ pages

No. 1379

\$20.95

Machine Forging

reprinted by Lindsay Publications

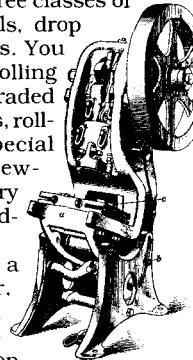
Learn about the three classes of forging machines: rolls, drop hammers, and presses. You get discussions of rolling bars, rolling plates, graded rolling, rolling with dies, rolling rifle barrels, special graded rolling, screw-thread rolling, and a very brief description of bending rolls.

You'll read about a board drop hammer, crank drop hammer, a strap and pulley drop press, and a steam drop hammer. Next, you'll find a number of sections on drop hammer dies, their materials, fastenings, forms, and examples of their work. You'll even get valuable information on providing an adequate foundation for such a hammer. You'll see lever shears, a vertical shear, a vertical punch press, an inclined press, and a horizontal "bulldozer."

Excellent illustrations and easy-to-read text from 1906. Low price. Valuable reading for the blacksmith who is looking to power tools to expand his capabilities. Get a copy. 5 1/2 x 8 1/2 booklet 34 pages

No. 20781

\$3.50



Elementary Forge Practice

by John L. Bacon

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Forge practice is metal working at its most basic level: heating, shaping and hardening. With it you can turn steel stock into boring bars, pliers, hammers and other useful tools.

Chapters include a general description of forge and tools, welding, calculation of stock for bent shapes, upsetting, drawing out, bending, simple forge work, calculation of stock and making general forgings, steamhammer work, duplicate work, metallurgy of iron and steel, tool-steel work, tool forging and tempering, and more. You get a number of tables and many pages of plans for useful learning projects: forge shovel, poker, C-clamp, bolt tongs, cold chisel, center punch, lathe cutting tools, scraper, hammers, and more.

You can make hammers, harden the faces, use a steam hammer with jigs and dies to make duplicate work, forge and grind lathe tools and much more. You learn skills that can save you money. A lot of this material is advanced 1908 "high-tech" material being used in industry not usually found in craftsman type books.

If you're new to forge practice and/or blacksmithing or want more than the usual beginner's books, order a copy of this. You'll like it. 5 1/2 x 8 1/2 softcover 288 pages

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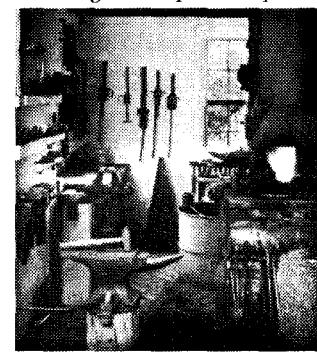
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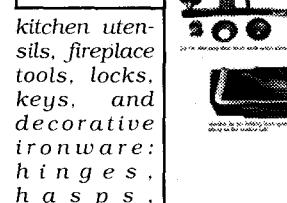
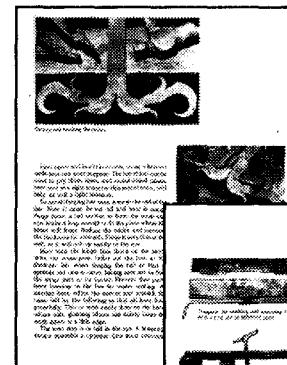
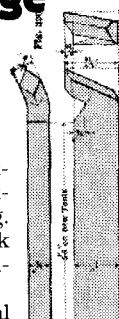
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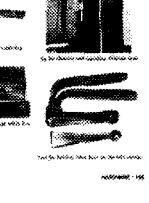
step-by-step text and photographs, enabling the reader to produce high-quality, hand-forged small ironwork. Included are detailed descriptions of work space

layout, specialized tools and techniques, whitesmithing, toolmaking, and locksmithing.

Mr. Streeter demonstrates not only how things are done, but how they can best be done by others. There is special emphasis on the crafting of early high quality, handforged



kitchen utensils, fireplace tools, locks, keys, and decorative ironware: h i n g e s , h a s p s ,



latches, bolts, hooks, springs, and more.

Students and professional and semiprofessional smiths will find this volume of great practical value, as will collectors of early American ironwork, owners of colonial houses, historians, preservationists and restorationists - in fact anyone interested in knowing how these early products were made."

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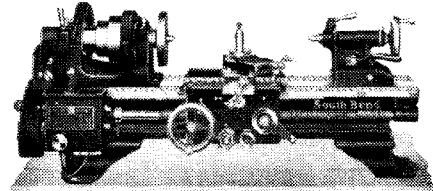
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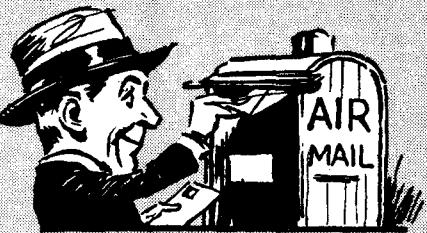
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so he pumped the tires on his 1924 Chevrolet up to 300 psi! Geez! Talk about a road hazard! We don't want to be anywhere near him on the road when he finally hits that pothole from hell. There will be at least one huge explosion. Maybe as many as four!

But if the potholes don't get him, we're going to replace the air in his tires with helium. As he floats through the air, maybe the Air Force will think he is Fred McMurray and that he has invented "Flubber". With luck they will shoot him down, and we'll finally get some peace and quiet around here.

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